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ARMED FORCES Management

PUBLISHED FOR THE ARMY, NAVY, AIR FORCE, COAST GUARD AND MARINE CORPS

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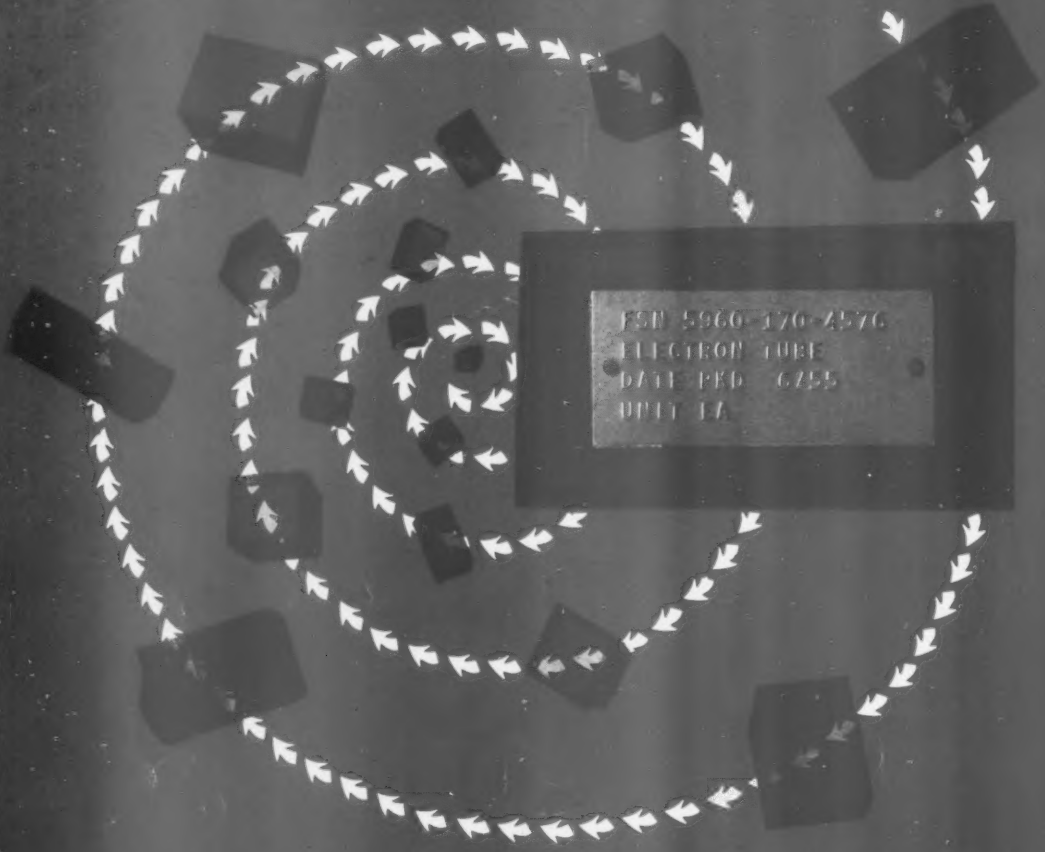
SERIAL RECORD

LOGISTICS: How the Air Force's New System Meets Future Needs

Complete Contents P. 3

"IF WE HAD ONLY METAL TAGGED SOONER..."

"My inspection team had just finished reidentifying acres of materiel on a Pacific island, when the typhoon struck," related the Materiel Facility Chief of an Air Force depot. "Every bit of identification that we had put on was gone. All the research that we had done to positively identify the 'lost materiel' had to be redone. If we had only metal tagged it in the first place we wouldn't have had to go to that island. After the storm we had to identify and mark for the third time."



In 1951 Dashew started to work with the Air Force to develop an accurate and durable method of identifying materiel in storage. Since then, billions of dollars of Air Force equipment have been positively identified with rugged, color coded Dashaplates® that remain clearly legible even in the face of sand storms, tornadoes, typhoons, monsoons, rodents etc. While officials responsible for storage try to warehouse most materiel inside, with ever changing international responsibilities and supply concepts, we cannot have inside storage all over the globe.

Military supply men favored metal tagging because they knew it would (1) assure them of having materiel available, identified and useable in any storage area, (2) it would eliminate costs of reidentification, repackaging and remarking, and (3) eliminate over procurement due to erroneous inventory based on faulty identification. Based on these advantages, other installations in the Navy and Corps of Engineers have adopted metal tagging.

Thanks to high speed Databosser embossing machines and multi-purpose Dashaplates, the cost of metal tagging is less expensive than other methods of identification. Further, with the portable writing machine, the Datawriter 18, it is possible to write requisitions, inventory and locator cards directly from Dashaplate identification tags, saving writing time and eliminating transcription errors. It allows indigenous personnel, regardless of their native tongue, as well as Americans with poor handwriting, to accurately transcribe records directly from the "identification media."

With the new electronic Databosser it is now possible to create Dashaplates directly from punched cards or tapes at the rate of 1000 or more different plates per hour . . . tying identification procedures directly to electronic data processing systems. Send for your free copy of "SIX HONEST SERVING MEN," the full story of Dashew systems and equipment applications. A sound and color slide presentation of this important new concept may be arranged for personnel concerned with these vital problems.

one of a series on Dashew systems and equipment in the armed forces and supporting industries

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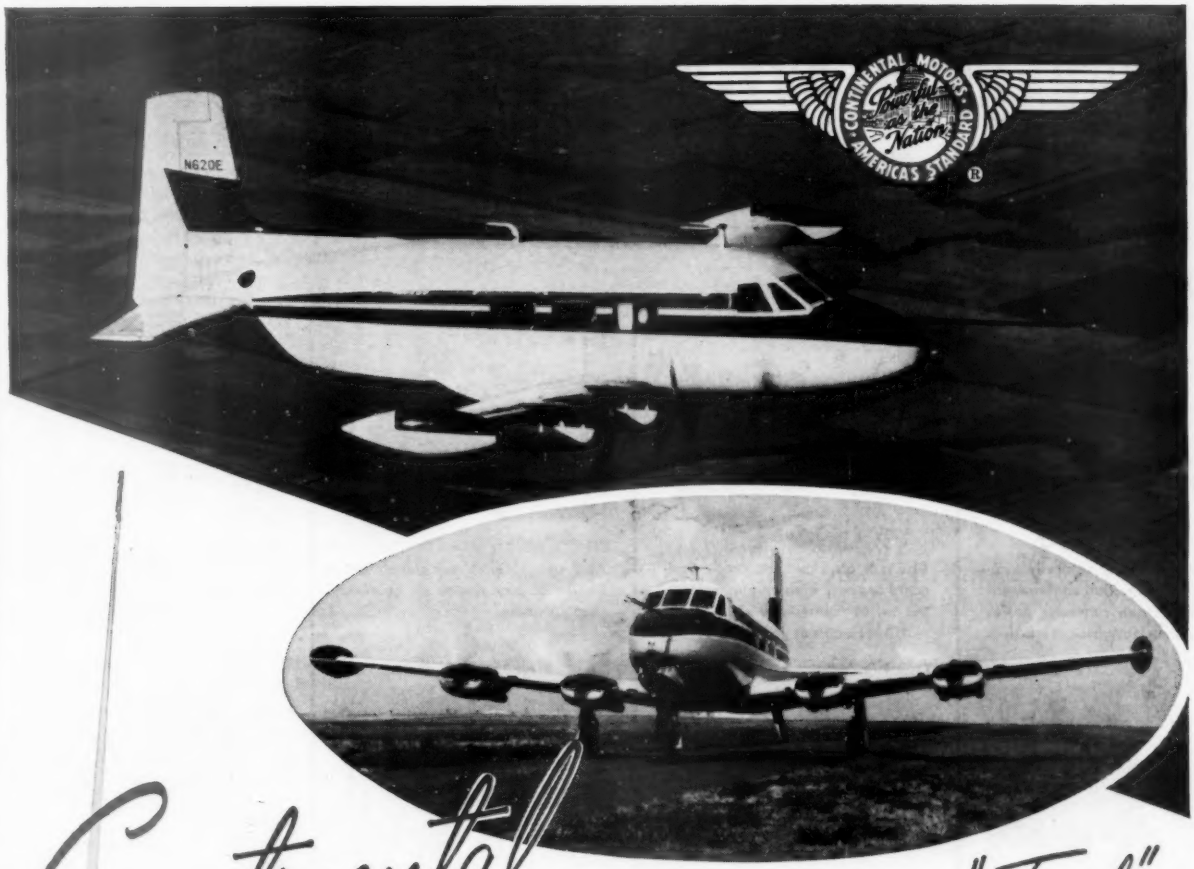

Continental Shares in Another Aviation "First"

. . . CESSNA MODEL 620, WORLD'S PIONEER PRESSURIZED FOUR-ENGINE EXECUTIVE TRANSPORT

Two organizations long noted for their contributions to flying have joined hands to achieve another major aviation "first," Cessna's Model 620, now flying. . . . The Cessna Model 620, world pioneer of its type—first pressurized four-engine airplane built for the corporate market—unites several qualities which users of executive aircraft have long desired. Its four Continental Red Seal GSO526-A engines provide four-engine safety, with the important plus of Continental dependability, economy and service backing. It is pressurized for altitudes up to its four-engine service ceiling of 27,500 feet, and air-conditioned for comfort aloft and on the ground. . . . Flights climaxing three years' work on this advanced airplane have fully borne out its builders' highest expectations. The Cessna 620 now takes its place as the latest on the long roster of fine utility aircraft using dependable Continental power.

Continental Motors Corporation

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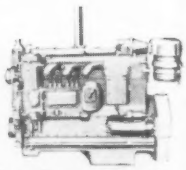
MODERN HEAVY-DUTY CAT* DIESELS FOR EVERY JOB

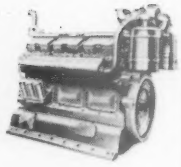
NEW D318 (Series G) Turbocharged **175 HP†**



Smaller, Lighter, Lower Priced!

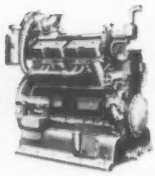
Keeping in line with Caterpillar's continued diesel leadership are these new Series G engines. They are designed for use in installations where space is at a premium. Both are small, light and low-priced; yet they deliver dependable power with the renowned Caterpillar durability. Both are available naturally aspirated (shown here) or turbocharged. Choice of air or electric starting system.

D397 with Turbocharger **650 HP†**



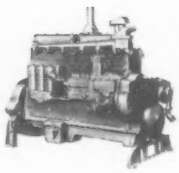
Also a Roots blown, naturally aspirated or spark-ignition engine; electric set or torque converter power unit. Air, electric or gasoline starting.

D375 with Turbocharger **430 HP†**



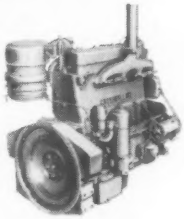
Also a Roots blown, naturally aspirated or spark-ignition engine; electric set or torque converter power unit. Air, electric or gasoline starting.

D342 Naturally Aspirated **210 HP†**

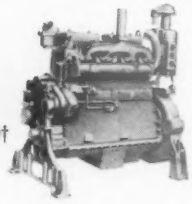


Also available as an electric set. Choice of air, electric or gasoline starting system.

NEW D315 (Series G) Turbocharged **115 HP†**

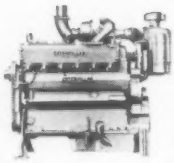


D339 Naturally Aspirated **140 HP†**



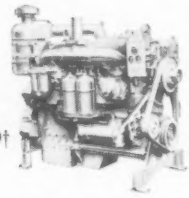
Choice of air, electric or gasoline starting system.

D337 with Turbocharger **310 HP†**

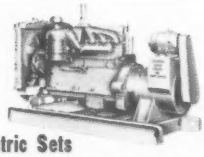


Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D326 Naturally Aspirated **200 HP†**



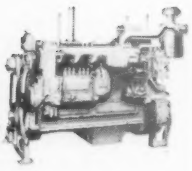
Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.



Electric Sets

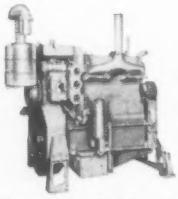
Dependable electric power, featuring the new Cat Generator, available in standard voltages, 60-cycle, in the following KW sizes: 30, 40, 60, 100, 150, 165, 200, 225, 250, 315, 350. Also available as 50-cycle and DC units.

D318 Naturally Aspirated **137 HP†**



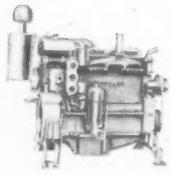
Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D315 Naturally Aspirated **91 HP†**

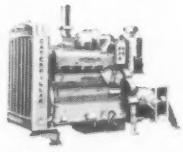


Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D311 Naturally Aspirated **65 HP†**



Also available as an electric set. Choice of air, electric or gasoline starting system.



Torque Converter Power Units

Many different arrangements are available for each of six Cat Engines. Wide choice of power units and wide choice of output shafts.

†maximum output capacity

In its quarter century of diesel leadership, Caterpillar research has been responsible for advance after advance in the efficiency of these engines. The units you see here incorporate the latest diesel developments – a modern heavy-duty line that offers you hundreds of various packages to meet your requirements for work power or standby power. Whatever your original or replacement needs, you'll find exactly the unit you want in this line-up, with engines available up to 650 HP (maximum output capacity) and electric sets up to 350 KW (continuous duty). Leading equipment manufacturers can supply them in the machines they build.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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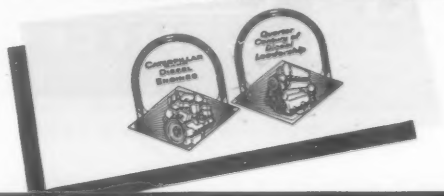

ON THE COVER

. . . Devastation, distance and detection are the "three dimensional" punch embodied in the rocket pods, pylon fuel tanks and radar nose of the all-weather Northrop Scorpion F-89D in its role of guardian of America's homes and industries. The F-89's huge wing-tip pods house 104 high-explosive air-to-air rockets, capable of destroying the biggest bomber; its black, cigar-shaped extra fuel tanks, slung under each wing, enable the Scorpion to range great distances to intercept unidentified aircraft; and its sleek, silver nose is crammed full of the newest electronic radar devices for discovering and tracking an unidentified aircraft over vast areas of sky.

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Featured This Month

Lieut. Gen.
Clarence S. Irvine, USAF

Beginning his career as an enlisted airplane engine mechanic in 1918, Lt. General C. S. "Bill" Irvine has advanced through engineering and flying assignments to become the Deputy Chief of Staff, Materiel of the United States Air Force.

He began flying even before he entered training as a flying cadet at March Field and Kelly Field, Texas. He received his wings and commission in 1921. In that same year, he took part in the bombardment tests conducted by General Billy Mitchell against World War I battleships.

Early in 1943, he was assigned to Army Air Forces Headquarters in Washington as Special Assistant for Aircraft Production and later as Chief of the Very Heavy Bomber Program. In these jobs, he was deeply involved in the production and modification of the B-29 Super-Fortresses. Among his tasks were those of getting materials and production facilities for these first atomic bomb carriers.

In 1944, he went to the Pacific as Deputy Chief of Staff of the 21st Bomber Command with the job of supplying, maintaining, and increasing the combat capabilities of B-29's which were striking Japan. He remained in the Pacific and Far East as Deputy Chief of Staff of the Pacific Air Command until 1947, when he went to Strategic Air Command at Andrews Field, Maryland.

During this period, he planned and established several record long range flights. On these flights, from Guam to Washington, D. C. and Honolulu to Cairo, General Irvine developed cruise control techniques which have greatly extended the range of the Air Force strategic bombers. In addition, he made a new record from Los Angeles to New York in 5 hours, 27 minutes. His best known flight was in 1946 in the "Pacusan Dreamboat" from Honolulu non-stop to Cairo in 39 hours. He has been active in almost every major Air Force production program with particular emphasis on the B-47 and B-52 bombers.

After his many years in the production, engineering and maintenance fields, it followed that he was the logical choice to become the Deputy Chief of Staff, Materiel, Headquarters USAF.

Lt. General Irvine was born in St. Paul, Nebraska, December 16, 1898. He attended the University of Nebraska, is married and has two children.

Brigadier C. N. Barclay

Insight into the management practices of Britain's army is provided this month by Brigadier Barclay, editor of "The Army Quarterly."

Although he retired from the British army in 1946, his writing and editing duties have kept him up to date on British army practices. In addition to his "Army Quarterly" editorship, he is assistant editor of "Brassey's Annual," the armed forces yearbook, and has written several books including "The New Warfare," "The First Commonwealth Division, Korea, 1950-53," and "Part Time Farmer."

He was born in January, 1896, educated at Thanet College, St. Peters, Kent and Elstow School, Bedfordshire, and commissioned in the Cameronians (Scottish Rifles), in 1915. He served in World War I and World War II, seeing action during his career in France, Mesopotamia, Dunkirk, Holland, Germany, and Southeast Asia.

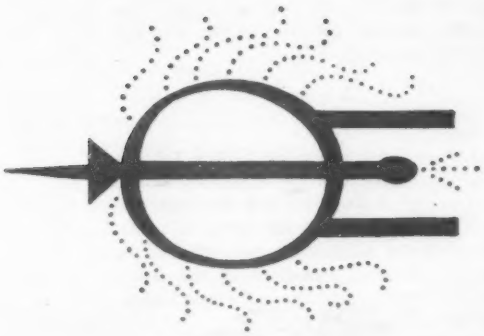
In spite of his highly active career, he has always found time to devote to his favorite recreation, playing golf on the tradition-filled courses of the sport's founding.

Lieut. Gen.
Edwin A. Pollock, USMC

Lieutenant General Edwin A. Pollock, who won the Army Distinguished Service Medal as commander of the 1st Marine Division in the "Reno-Carson-Vegas" fighting in Korea and the Navy Cross as a battalion commander with that division in the Battle of the Tenaru River on Guadalcanal, is now serving at Camp H. M. Smith, Hawaii, as Commanding General, Fleet Marine Force, Pacific.

A Marine officer since 1921, the general served at sea and on expeditionary duty in Santo Domingo and Nicaragua during the 1920s and '30s. In World War II, besides the Guadalcanal-Tulagi landings and the Guadalcanal campaign, he saw action on Eastern New Guinea, Cape Gloucester and Iwo Jima, winning the Legion of Merit with Combat "V" as Assistant Chief of Staff, G-3 (Operations), of the 1st Division at Cape Gloucester and the Bronze Star Medal with Combat "V" in the same capacity with the 4th Marine Division at Iwo Jima. In Korea, where he commanded the 1st Division from August, 1952, to June, 1953, he received the Republic of Korea's Order of Military Merit Taiguk, in addition to the Distinguished Service Medal.

He was named Commandant of the Marine Corps Schools, Quantico, Va., on January 1, 1956, and was promoted to his present rank at that time. He assumed his present duties on September 1, 1956.



صفة بيضة تخرج وتحرق

er-Rammah's self-moving egg

Join two flat pans; fill with an incendiary mixture; add a tail; propel by two large rockets. In A.D. 1280, Arabia's Hassan er-Rammah, gazing centuries ahead, proposed this ovoid in his "The Book of Fighting on Horseback and with War Engines."

Today rocket-powered ordnance is foremost in American defense...and Aerojet-General Corporation is foremost in rocket power. Aerojet's solid-propellant rockets are used on the Sparrow and Regulus and on the newest, most advanced American missiles.

Aerojet-General CORPORATION

A Subsidiary of The General Tire & Rubber Company

PLANTS AT AZUSA AND NEAR SACRAMENTO, CALIFORNIA

LOGISTICS: How the Air Force's New System Meets Future Needs

By Lt. Gen. C. S. Irvine
Deputy Chief of Staff Materiel, USAF

● **Emphasis today is on force in being. In any future major war which may be forced upon us, there will no longer be time for mobilization. During the initial phase, at least, our forces will have to fight with what they have at the outset, and the ultimate outcome of the war may well be decided in this initial phase.**

● **To stay ahead we must apply far-sighted thinking and planning to the management of our resources, and be prepared to make the most of promising new developments. The air logistics system must be so constituted as to permit the total exploitation of the nuclear–jet capability of our Air Force. The most priceless ingredient in the whole process is one we cannot buy—Time! Our Air Force logistics operation is geared to this concept . . .**

● The prime requisites of any modern logistics system are:

1. **Mobility**
2. **Flexibility**
3. **Availability**

Here's Why . . .

THE stark realities of our time make it clear that we cannot rely upon wartime mobilization and build-up to provide the necessary weapons and equipment required for National survival. Not only must we be fully prepared for immediate retaliation, but we must be able to absorb the enemy's efforts without losing the ability to pursue the conflict to the ultimate victory. The Air Force logistic system must keep pace with these operational realities.

A fully equipped, combat ready Air Force, strategically dispersed, requires a supply system radically different from anything we have seen in the past. It is no longer possible or strategically feasible to have lots of everything stored in vast supply dumps, nor can we place orders for gradual accumulation of materials after the emergency arises.

In forging a modern logistics system we have emphasized the necessity for rapid means of communications on a world-wide basis and the need for a more effective and speedier system of delivery of required supplies. From a planning standpoint we are now required to look from 5 to 10 years into the future and to be doubly alert to the impact of modern technology in the forging of the weapon systems which constitute our force-in-being.

Responsibility for operating the world-wide Air Force logistics system is vested in one major command—the Air Materiel Command with Headquarters at Wright-Patterson Air Force Base, Dayton, Ohio. The existence of this Command, charged with operational responsibility for Air Force Materiel activities, makes it possible for Headquarters USAF to concentrate on overall policy, programs, and management. To properly carry out these functions, two things are essential; first, that AMC be given maximum delegation of operational authority and second, a closely coordinated working relationship between the Deputy Chief of Staff Materiel and the Commander, Air Materiel Command be maintained.

Management by Exception

The materiel organization concentrates on management of high dollar cost and high priority operational items. By controlling these major items, and by utilizing the broad dollar and program controls imposed with them it is feasible to exercise effective management control over the entire materiel activity. A brief review of the procedure for establishing the annual buying programs will serve to illustrate how these controls are specifically applied.

Although the Air Materiel Command computes detailed requirements for all items prior to procurement, the Air Staff reviews only the major item computations to determine the specific quantity to be procured. This determination is based upon consideration of such factors as operational programs, current inventories, fund availability, and relative priorities to insure that each yearly procurement increment will provide balanced logistic support of operations. Having determined the procurement quantities, directives establishing the buying program and authorizing their implementation are forwarded to the Air Materiel Command.

Aircraft, missiles, engines, and certain electronic items, because of their fundamental relationship to the total materiel program, are singled out for the greatest degree of attention. In addition to reviewing the requirements computations, specific production schedules for them are approved and directed by the Deputy Chief of Staff, Materiel.

Once the buying program has been established, the Materiel Staff keeps abreast of the progress being made to accomplish it through periodic status reports from the Air

Materiel Command. To facilitate implementation, minimize reporting workloads, and provide maximum flexibility to the Air Materiel Command, reporting controls and procedures have been designed to limit the number of items subjected to control and the frequency of reports.

As a general rule, only major program changes and increases in procurement quantities require advance approval of the Air Staff. Other adjustments which are reflected in the status reports are subjected to careful analysis and permit timely Air Staff action in the event that a reported action is not fully acceptable.

As a corollary to the quantitative control of major items, broad dollar controls are utilized for the balance. Since a relatively small percentage of items accounts for the bulk of the dollars, the balance can be readily divided into commodity areas, as indicated by the Air Materiel Command computations of lesser items on both an item and commodity class basis. For this segment, reporting on the commodity area-dollar basis provides sufficient data for management purposes. The reports will indicate if problems are developing, permitting attention to be concentrated where it is specifically required. Through this management-by-exception approach, reporting burdens are minimized and management time is used to best advantage.

Importance of Decisions

Decisions reached at Secretary of Defense, Secretary of Air Force, and Chief of Staff level establish the tenor of logistic activity. As a participant in this decision-making process, the Deputy Chief of Staff Materiel must assess proposed policies, plans and programs, advise on the feasibility of the proposals, and provide the necessary information on which sound decisions can be based. Since the lead time for acquisition of materiel, construction of facilities, and training of technicians is so lengthy a process, effective participation in these discussions requires an extensive study of current logistics support capability and industry potential. Recent developments in research and the state of the art must also be considered, and our thinking must be projected well into the future. Complicating the problem even further is the necessity for assessing the possible strength and moves of a potential aggressor and preparing for any eventuality.

An Air Force which is to be adequate, effective, and economically attainable, must be geared to the mission for which it is designed and the resistance it is likely to meet. Numerical strength is only one of the factors to be considered. Qualitative superiority is essential. Rate of climb, combat radius, speed, and maximum altitude can mean the difference between victory and defeat. Tomorrow's war cannot be fought with yesterday's strategy or weapons.

An inescapable requirement of the job of the Deputy Chief of Staff Materiel is to meet and work with key public, business and industry officials and groups. This phase of the task includes plant and factory visits, speeches, discussions and meetings, and a large measure of personal contact with top-level public, professional, technical, and management personnel for the purpose of mutual understanding of problems and prospects for the future.

Our relationships with Congress and with industry also have a major bearing on materiel management decisions. Congress provides the funds for building and maintaining the Air Force, and requires an accounting of our stewardship. Materiel requirements and programs must be presented, budget requests must be justified, and basic logistic concepts must be explained in sufficient detail to warrant appropriation of the necessary funds.

Industry is the foundation on which the strength of the Air Force is built. As we all know, a healthy and vigorous industry is essential to National security, and this is a primary consideration in drawing up production and procurement programs. A major responsibility of materiel management is to insure the wisest and most equitable utilization of the nation's production resources. For its part, industry must provide advanced designs to assure our air supremacy. This Industry–Air Force partnership calls for close and continuing cooperation on the part of both members of the team.

USAF Is Big Business

Supporting a modern, global Air Force is big business, the largest in the world. The Air Force buys more each year than the five largest corporations in the nation. Expenditures are in excess of $16 billion annually, with more than half the total going for materiel. Air Force inventories include more than a million and a quarter different items. This is five times the number carried by one of the largest merchandising firms. Aircraft and related equipment impose a maintenance workload ten times greater than all United States commercial airlines combined.

The efficient operation of our business demands continuous application of the best management techniques, including those learned from the larger commercial operations. Electronic data processors for example, are being used to greater and greater extent in computing requirements and managing inventories. Other types of equipment are being utilized in depots to eliminate paper work and speed up the processing of supplies. Combat units and depots are being linked together with an electronic network for fast submission of requisitions. Airlift is being employed as a normal means of moving critical and high cost items to the user. By thus compressing the supply cycle, we not only increase the flexibility and mobility of our combat units but also conserve our resources by reducing stockpiles and pipeline inventories. In these and many other ways, the experience and techniques of business are being put to use wherever they can be applied to improve the management of materiel resources.

AMC Organization

A brief explanation of what each of these organizations does will serve to bring the materiel management task into sharper focus. (See charts)

The Director of Procurement and Production is responsible for establishing procurement policy, phasing procurement action on a

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weapon system basis, planning for industrial resources, and for procurement and production follow-up. Additionally, materiel buying programs approved by Headquarters USAF are forwarded to the Air Materiel Command by this office for necessary procurement action.

The Director of Supply and Services is concerned with overall policy guidance and monitorship of the receipt, storage, distribution and disposal of supplies and equipment procured by the Air Force. Materiel aspects of special weapon programs are also the responsibility of this office, together with such services as food, mortuary, clothing, and commissary operations.

Transportation and traffic management and planning are the business of the **Director of Transportation.** He is responsible for coordinating Air Force transportation requirements, and for working with the commercial carriers, other military services and government agencies in arranging for, allocating and utilizing available transportation to best advantage. This includes policies concerning utilization of and arrangments for airlift in support of the military departments, Management of packaging, materials handling, and motor vehicle programs, of the Air Force is also centered in this office.

The Director of Maintenance Engineering is responsible for maintenance policies, programming and planning. This office maintains surveillance over the maintenance programs for aircraft and related ground equipment to insure satisfaction of operational needs, safety of flight, and modernization requirements. They also strive for ready access and easy maintainability in new equipment during the design, development, and production phases.

The Director of Logistics Plans concerns himself with planning for materiel support of Air Force long-range plans and programs. His is the task of developing new approaches required to support the Air Force of the future, which will be utilizing equipment and methods of warfare now in the development and planning stages. In this endeavor, his office works closely with outside study groups and research organizations as well as major commands, the Joint Chiefs of Staff and others. In effect, they assess current activities in terms of long range programs and shape the pattern of future logistics development.

The Director of Materiel Programs, unlike the Director of Logistics Plans, is concerned with materiel needs for the immediate period. He utilizes approved war plans and peacetime program documents in developing the basic criteria, policies and procedures to be followed in computing materiel requirements and preparing aircraft and missile production schedules. This guidance is then used by the Air Materiel Command in computing detailed requirements to support Air Force operations for one to three years into the future. The computed requirements are reviewed and approved by the Air Staff through the primary effort of this office. The Director of Materiel Programs is responsible for the justification of the materiel budget before the reviewing agencies—i.e., Air Force, Office of the Secretary of Defense, Bureau of the Budget, and the Congress. His office also monitors the use and status of the

MATERIEL ORGANIZATION
HEADQUARTERS, USAF

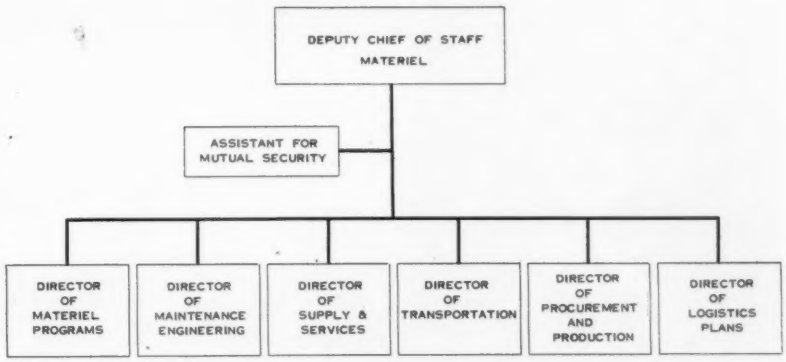

DEPUTY CHIEF OF STAFF MATERIEL
ASSISTANT FOR MUTUAL SECURITY
DIRECTOR OF MATERIEL PROGRAMS
DIRECTOR OF MAINTENANCE ENGINEERING
DIRECTOR OF SUPPLY & SERVICES
DIRECTOR OF TRANSPORTATION
DIRECTOR OF PROCUREMENT AND PRODUCTION
DIRECTOR OF LOGISTICS PLANS

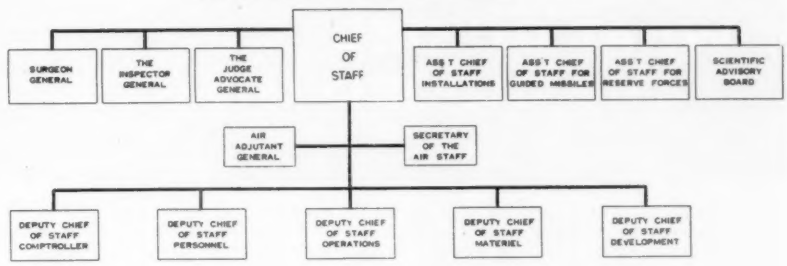
FIGURE 1

Materiel Organization

The Materiel organization in Headquarters USAF (Figure 1) is one of five major Air Staff areas—comptroller, personnel, operations, materiel, and development (Figure 2). Each is headed by a Deputy Chief of Staff who answers to and speaks for the Chief of Staff on all matters falling within the scope of his area of responsibility. In this capacity he is responsible for keeping the Chief of Staff informed of pertinent matters, and he also works directly with the civilian Secretaries of the Air Force and Department of Defense. Thus, in addition to supervising his area of interest, each Deputy Chief of Staff has a major responsibility to the highest Defense officials, both military and civilian.

The Materiel organization within the Air Staff is also based on a functional division of responsibility (Figure 1). Procurement and Production, Supply and Services, Maintenance Engineering and Transportation are each set up under a Director. Long range logistic concepts, which shape the future policies and programs within each of these areas are developed by the Director of Logistics Plans. Short range planning and programming is the responsibility of the Director of Materiel Programs. The Air Force portion of the Military Assistance Program, has been set up under an Assistant for Mutual Security.

AIR STAFF
DEPARTMENT OF THE AIR FORCE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THE INSPECTOR GENERAL
THE JUDGE ADVOCATE GENERAL
CHIEF OF STAFF
ASS'T CHIEF OF STAFF INSTALLATIONS
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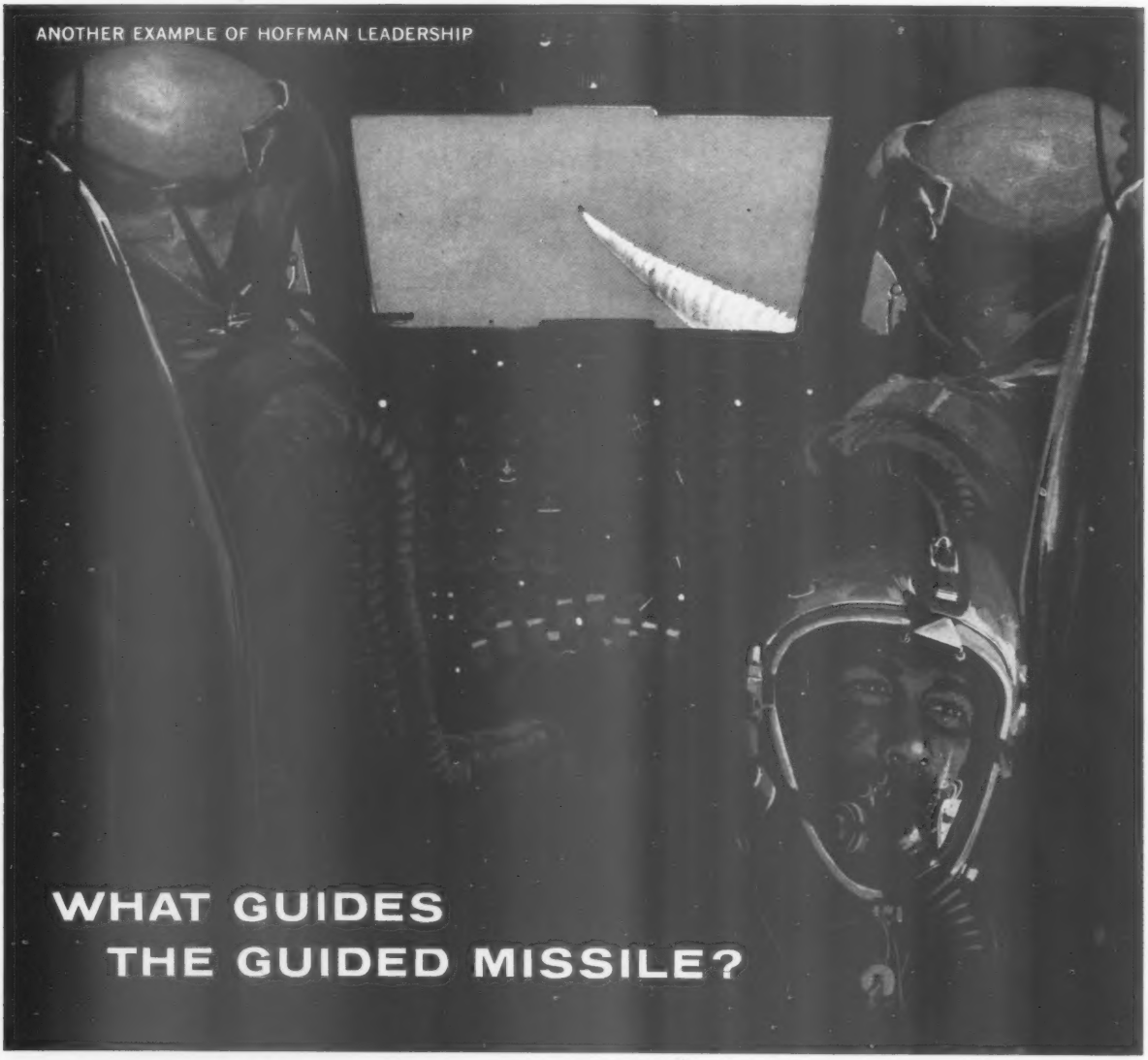
DEPUTY CHIEF OF STAFF MATERIEL
DEPUTY CHIEF OF STAFF DEVELOPMENT

FIGURE 2



Air-to-air missiles must be guided from the mother plane during that brief interval between the closing of the firing switch and the instant the missile locks on its target. This is the critical moment when a success or failure depends upon the exactness with which computers in the mother plane direct the missile's flight. This is the moment when nothing is as vital to the kill as the precision voltage reference system controlling the computers.

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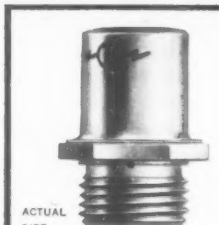

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appropriated dollars used to procure the aircraft, missiles, spare parts, and other items required to equip and maintain the operational units of the Air Force.

In connection with the Military Assistance Program, policies and major program considerations are worked out by the Assistant for Mutual Security in conjunction with the Office of Secretary of Defense, the Department of State, and the appropriate overseas commands. Programming of detailed materiel requirements for foreign nations eligible to participate in the Military Assistance Program is also monitored by this office.

Close coordination with USAF programs and requirements is essential to insure the highest degree of military efficiency and strength of the Allied Air Force in return for the large United States investment involved.

Organization structure alone does not, of course, tell the whole story. As in any undertaking of this magnitude communication plays an important part. Of primary importance are the daily personal contacts with the Deputy and among the Directors. In addition, weekly staff meetings help keep all concerned abreast of developments which have a bearing on their areas of interest, and serve to focus attention on major problems. Committees are employed whenever they can serve a useful purpose without diluting responsibility for getting the job done. The materiel organization is represented on boards and committees which tie the Air Staff together for planning, programming, and policy purposes. In other cases, the boards and committees are interdepartmental in nature, and serve to link the Air Force with the other services and the Department of Defense.

The breakout of the Materiel organization along functional lines, coupled with extensive delegation of authority to each of the several directors, facilitates day-to-day operations and at the same time provides a means of keeping the Deputy fully informed on those matters which require his personal attention. Included are such things as new aircraft and guided missile production programs, production bottlenecks, requirements for second-source production capability, expediting action to obtain items required to correct deficiencies in grounded aircraft, major funding problems, significant changes in the overall logistic system, and many others of like nature. Decisions on such matters require a close working relationship with the Commander of the Air Materiel Command, and other major commands on the one hand; and with the Chief of Staff, the Secretary and the Assistant Secretaries of the Air Force on the other.

As we move forward in the era of supersonic aircraft and guided missiles, two of our biggest problems will continue to be the increasing complexity of our equipment and the shortage of trained technical personnel to maintain and operate it. The greater complexity of our weapons is the price we must pay for increased performance. To counter the problem of complexity we are stressing "design for maintenance" along with "design for performance" in the early development stage of new weapons. The shortage of trained personnel is a National problem and we must find a National solution if we are to retain our margin of technological superiority. These are not just tomorrow's problems.

It is self evident that the best way of avoiding a nuclear war is by having a striking force strong enough to deter potential aggressors. If our deterrent force is to be effective, it must be qualitatively superior. Technological leadership has been ours for so long that, up until a few years ago at least, we generally took it for granted. However, we have no monopoly on technological development. The Soviets are demonstrating this beyond question by the speed with which they are closing the gap. Their emphasis on heavy industry, their concentration on developing engineers and technical personnel, and their success in developing modern, high-speed aircraft, leave no room for complacency.

* * *

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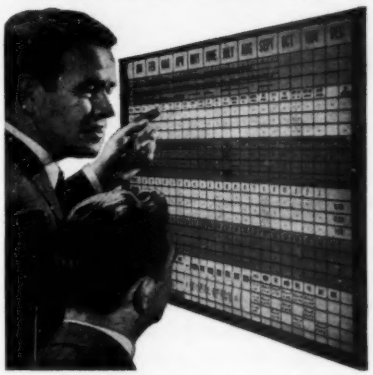

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The British Army's Management Formula

What Are the Problems? Why Does Britain Feel the Old Method Solves Them Better?

IN THE United States the word "management" is used almost as frequently in the armed services as it is in business. In Britain it is used just as often in business, but very rarely in the armed services. In the British Forces we use the word "administration" to describe similar, although not exactly the same, activities.

In view of this difference in nomenclature it will be as well to define clearly what we mean by "management."

It means the efficient and economical use of all personnel and material with the object of maintaining the armed forces in the best condition to provide a deterrent to aggression, and to win battles and campaigns in the event of war.

It may be mentioned that the only significant difference which the writer can detect between American "management" and British "administration" is that the former resembles business methods more closely and places greater emphasis on the use of labor-saving devices, whereas the British "administration" is more closely allied to the conventional General Staff system as originally developed in the German Army and introduced into the British Army early this century.

The General Pattern

For the rest of this article we will drop the word "administration" and use only "management." The subject will be discussed from the Army point of view, as the numbers of men and amount of material involved are much greater, and the problems possibly more intricate, than in the Royal Navy and Royal Air Force. In essentials, however, the system is the same in all three services.

It will be appropriate to begin with a brief description of the general pattern of British military organization. The British Army is controlled by the Army Council, a body consisting of three civilian members (including its President, the Secretary of State for War), and five military members. In each home and overseas Command the Commander, assisted by his staff and the heads and representatives of the administrative services (transport, supply, legal, etc.), provides the day-to-day management. The Staff is divided into three main branches — General Staff (operations, training, etc.), Adjutant-General's Branch (pay, legal, discipline, promotions, etc.), and the Quartermaster General's Branch (supply, transport, movements, etc.)

Summarized, it may be said that the Staff comprises officers with general, rather than specialized military knowledge; whereas the departmental officers are technical experts.

Before 1914 the British had never mobilized on a national basis and had never put a really large army into the field. In the 56 years of this century we have, however, been engaged in war, or military policing, almost continuously. For the ten years of the two World Wars the nation was completely mobilized: between 1900 and 1914 it was engaged in a number of small overseas cammpaigns: in the inter-war years British troops fought in Russia, the Northwest Frontier of India on several occasions, and in Palestine. Since 1945, they have been actively engaged in Malaya, Palestine, Kenya, Korea and elsewhere.

Adoption of Business Methods

The vast expansion of the Army in the First World War, together with the obvious necessity for the employment of machinery in common use in civil life, resulted in the service seeking the advice of industry to solve many of its problems, and to the adoption of business methods within the Army. Since then this process has developed, and today the British Army employs many of the managerial methods common in industry.

Nevertheless the British Army—and this also applies to the other Services—remains somewhat suspicious of business methods and reluctant to adopt them on a wholesale scale. There are many reasons for this. In peace, as well as in war, Army units are widely distributed all over the world. Each garrison has its special problems, and a system suitable in England is not necessarily satisfactory in Hong Kong or Cyprus. There are also fundamental differences between a defense service and big business—the lack of competition due to the absence of the profit motive; the short-term service of most of the lower ranks; instability owing to constant moves and the frequent redeployment of forces due to changing conditions.

The fighting services must also be prepared to change from a peace to a war footing in a matter of days

by Brigadier C. N. Barclay

Editor of "Army Quarterly," London, and Assistant Editor of "Brassey's Annual—The Armed Forces Year Book." Brigadier Barclay served in the British Army in various theaters of operations during both World Wars. He is also the author of a number of books on military subjects.

Special Note: The views expressed in the accompanying article are the author's own, and are not necessarily officially endorsed.

EYES LIKE A CAT...

The night is black . . . and objects only a few feet away lose their identity in the darkness. Yet this trained soldier with the sniperscope can see quite clearly, detecting the slightest movement in the eerie green picture he sees through his sights. Men skilled in the use of such special equipment are essential to the successful training of others. That's why the military chooses the speedy, dependable Scheduled Airlines—to put key men on the job *five times faster,* save pay and per diem dollars too. So whether you're moving one man or many—call a Scheduled Airlines representative. *Compare the costs, speed and dependability* of Scheduled flight with any other means of travel . . . learn how to keep your men ON THE JOB . . . not "on the way."

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or even hours, and, therefore, the peace-time system must approximate to what is also suitable under active service conditions, if the change-over is to take place smoothly on mobilization.

The Financial Aspect

Another very important consideration is the British financial system as it affects the defense services. Annually the War Office prepares a detailed statement of the Army's requirements during the next financial year, showing how the money is to be spent. This is subject to detailed scrutiny, and usually some pruning, by the Ministry of Defense and the Treasury. The sum finally allotted has to be spent in the manner specified and, if any savings occur, they must be surrendered at the end of the year.

Unlike a board of directors in a big business, the Army Council has no large capital sum at its disposal, and cannot raise one by means of a loan or by offering new shares. The Army has to live on its income from year to year. This makes it very difficult to plan major long-term projects, such as the building of new barracks.

This is not all. The British Army —combat units in particular — is traditionally based on the Regimental system under which units are closely associated with countries and other geographical areas of civil administration. Due very largely to this system, we believe, the Army's disciplilne, morale and general efficiency has weathered two World Wars in a highly satisfactory manner.

The Service Chiefs are reluctant to tamper with a system of "management" which has stood the test so well, and they have been, and still are, apprehensive that too much change in the direction of business methods might affect morale adversely, and result in some of the unpleasant complications in human relations which are experienced in industry.

We have, therefore, adopted a system of compromise, retaining our traditional basic methods of management while borrowing from industry what we consider to be desirable and practicable. The scientific application and study of time and motion, and the appointment of Public Relations Officers for briefing the Press and publicizing the Service, are two of the more important of many fields in which the Army has followed industry.

The System in Practice

It will be apparent from what has been stated that British defense services are considerably restricted in their activities by financial control. They rarely get all they want, but have to make do with the men and material provided. Within these limits the Army Council—taking the Army as typical of all Services—lays down the policy on which the managers—commanders, staffs and departmental officers—work. These officers have little say in the number of men available, the amount of type of equipment, or the accommodation placed at their disposal. They do, however, have considerable latitude in the method of management, and it is in this field that we can most usefully examine the subject.

For this purpose we will take as an example a Command in England, such as Southern Command, with Headquarters at Salisbury, in Wiltshire, and consisting of perhaps 40,000 men. Many of these are in static units, such as the School of Artillery at Larkhill and the Depot of the Wiltshire Regiment at Devizes. Some will be field formations: perhaps an infantry division, independent brigades, a tank regiment or one or more artillery regiments, according to circumstances, which vary frequently with our overseas commitments.

Emphasis on Human Relations

In purely technical matters these officers deal directly with their departmental superiors at the War Office. In nontechnical matters they work under the order of the Commander-in-Chief, to whom they also act as technical advisers. Lower down the scale, in Divisions and Brigades, these services are represented by subordinate officers. In units — infantry battalions, regiments of artillery, schools of instruction, depots, etc.—they are not represented. Here management is in the hands of Regimental officers working under the orders of the Commanding Officer of each unit, who can, and frequently does, call on Departmental officers at Headquarters for help and advice. Through them any complaints and suggestions are dealt with.

Emphasis is placed on human relations. Discipline is strict, but every effort is made to apply it sensibly. Regimental officers, Army Chaplains and voluntary organizations working in close contact with the Army, e.g. S.S.A.F.A. (Soldiers', Sailors' and Airmen's Families Association), and Forces Help Society, are available to assist men with their domestic problems, and the Army Education Corps gives instruction designed to assist them when they leave the Service.

In Peace and War

We may well ask how this system meets requirements: is it efficient, and can it be improved?

As a generalization it can be said that it has stood the test well in peace and war.

Nevertheless, it would be foolish to pretend that there are not some matters capable of improvement within the existing framework. Much of our office procedure is antiquated, and we do not make sufficient use of mechanical equipment: we are not as economical in manpower "overheads" as we might be, and many consider that the proportion of non-fighting to combat soldiers is far too high.

These, and other matters concerned with military management are at present under Government investigation, and it is possible that in a short time we shall see many improvements, including the provision of some of the less expensive mechanical labor-saving devices which are common in industry, and are in domestic use on both sides of the Atlantic.

As automation develops we may see further adoption of industrial methods; but, for the reasons given earlier in this article, this is a matter in which we are likely to make haste slowly. Our existing system has not been found wanting, and the Services are on guard against adopting any measures which, although suitable in home Commands in peace, might be unsuitable in some overseas station and would prejudice the overriding requirements—a smooth change-over from peace to a war footing.

How the New Management Program Works In the Marine Corps' Largest Command

The accomplishment of his mission is the first concern of any Marine Corps Commander. In the accomplishment of this mission is included a program to achieve the most efficient and economical use of all resources. Management within Fleet Marine Force, Pacific consists of those practices that are used by the staff to set forth the information necessary to enable the commander to make a decision that will result in efficient and economical use of his resources within the framework of his mission.

★

In March of 1956, the Commandant of the Marine Corps revised the Marine Corps Management Improvement Program. The fundamentals of the new program are:

- **Increased efficiency, economy, and effectiveness in supporting the Marine Corps as a combat organization.**
- **Every commander should assume that any operation can be improved.**
- **That improving the economy, effectiveness and efficiency of any Marine Corps activity is its commander's responsibility.**

Here's Why...

By Lt. Gen. E. A. Pollock

FLEET Marine Force, Pacific is the largest command within the Marine Corps. From its Headquarters, located on OAHU, T. H., it controls approximately two-thirds of the operating forces of the Marine Corps. It is the largest type command in the Pacific Fleet.

● This powerful command is premised on one dominating concept: that it is a force-in-readiness ready to go anywhere at any time orders are received. While the whole world has become its sphere of operations, Fleet Marine Force, Pacific is based in the Pacific Ocean area and oriented toward the Far East.

● The mission of Fleet Marine Force, Pacific is to be ready to provide Commander in Chief, Pacific Fleet with balanced ground or air-ground task forces that are tactically and materially ready to conduct assault operations, seize or defend advanced bases or for any expeditionary duty that may be directed.

● Management does it's part in these 5 areas:

PERSONNEL

Within the framework of the Commandant's Management Improvement Program, Fleet Marine Force, Pacific, is continually striving for methods that will simplify the task of the commander. One of the recent major steps in this direction was the promulgation of a Standing Operating Procedure for Personnel. Issuance of this document enabled the revocation of 41 bulletins, orders, and separate letters concerning many various aspects of personnel administration. Further, it standardized the many different local personnel procedures and provided the commander with an effective method of operating within those requirements not included in our Marine Corps wide personnel accounting system.

This Headquarters then took a good looks at Fleet Marine Force, Pacific personnel replacement procedures. Personnel stability is a prime requisite for good morale and smooth functioning within a command. The aim was to assure an even flow of losses and gains within our overseas commands. within our overseas commands. Reduction of "humps" in replacement flow is not easily solved, however gains are being made with planned minor shortening and extending of tours and by recent authority from the Commandant to institute a unit replacement program.

SUPPLY

An amphibious force in readiness can no better afford to be oversupplied than it can afford to be undersupplied. Fleet Marine Force, Pacific considered various bases on which supply levels might be established. After much study and thought it was determined that the most effective base for the establishment of supply levels was actual usage. Concomitant with the employment of usage data as a basis for supply is the need to provide effective and complete stock control methods for gathering this data at all echelons of supply. Such data is maintained by all Fleet Marine Force, Pacific units, and periodically all usage data for like items is funnelled into the electric accounting machines.

From formulas developed by the Force Supply Section, the machines arrange the usage data to show quantities on hand by units, quantities used during the period since the last report, dollar values and quantities excess to or less than the requirements based on actual usage.

This machine-prepared information is passed on to major commands concerned (with this Headquarters recommendations and instructions on revision of stock

levels, redistribution of excesses and other guidance required in effective Supply management.) Usage data determined and related statistics are further used in making recommendations to higher headquarters on revisions to allowances and replenishment factors.

Another closely related program is that of stock fractionation based on both usage and dollar value. Using usage history studies as a starting point levels are established for items based on popularity and cost. Thus higher levels are maintained on fast-moving, low dollar cost items and very low levels are maintained on slow-moving, high dollar cost items.

MRI

The Machine Records Installation at Headquarters, Fleet Marine Force, Pacific has in many ways increased the effectiveness and efficiency of this command. Machine Records Installation No. 6 at the present is involved in performing accounting in the following mechanized accounting systems: (1) Fiscal Accounting (2) Personnel Accounting, (3) Disbursing, (4) Plant Property Accounting, (5) Stock Control and (6) Local applications such as personnel locator and the preparation of information which is available in the various accounting systems above for use by various staff sections as they require.

Future planned uses of this valuable management are: (1) a mechanized combat casualty reporting system which is now being tested, (2) development of machine and mark sense procedures for establishing a stock location and inventory system, (3) expansion in the Fiscal accounting field to include accounting for all the appropriated funds in Fleet Marine Force, Pacific.

PAPERWORK MANAGEMENT

In November 1956 a Reports Control Program was established for Headquarters, Fleet Marine Force, Pacific. Objectives of the program were to improve necessary reports and related procedures, to control the creation of new reports, and to eliminate unnecessary reports.

The first step, compiling an accurate inventory of recurring reports both required (incoming) and prepared (outgoing), has been completed. The second phase, that of assigning appropriate reports control symbols to all Fleet Marine Force, Pacific reports, is in progress. It is planned to publish an order to the field listing all reports required by this Headquarters and another order for internal distribution listing all the reports prepared by this Headquarters.

As a result of this program, the need for a copy of a report has been eliminated and it is expected that as the program progresses further savings in man-hours and other costs will be forthcoming.

COMPTROLLER

To insure efficient, effective financial management throughout Fleet Marine Force, Pacific a three-point program has been instituted as follows:

1. Maintain a continuous review of all current directives applicable to financial management and rewrite them into two documents—A Standing Operating Procedure for use within Fleet Marine Force, Pacific and a Manual for Financial Management for use at Headquarters, Fleet Marine Force, Pacific.
2. Education of all Headquarters, Fleet Marine Force, Staff Officers on the procedures in effect within this force and at this Headquarters.
3. Education of all subordinate units on the system in effect and the latest changes in procedure to be followed.

The *SOP* sets forth all requirements imposed on sub-allottees for the administration of appropriated funds and budget formulation. It requires additional information to be placed on reports to provide Staff Officers at Headquarters, Fleet Marine Force, Pacific with information with which to intelligently oversee all aspects of financial management.

The Manual for Financial Management, in effect, brings all Headquarters Fleet Marine Force, Pacific Staff sections into the business of financial management by appointing those officers having prime interest as Project Managers and Expenditure Account Supervisors. The Manual sets forth in detail the duties of all staff sections concerned and outlines the procedures to be followed in formulating and executing budgets.

The institution of this new system coupled with imposed stock levels caused all elements of the Force to re-evaluate fund requirements for FY 1956. In the 3d quarter it was determined that Fleet Marine Force Pacific could operate efficiently with over four million dollars less than had been previously anticipated.

In an effort to reduce the workload on Fleet Marine Force, Pacific commanders who perform Allotment Accounting a Staff Study has been prepared which recommends that all the Allotment Accounting be mechanized and accomplished at Headquarters, Fleet Marine Force, Pacific. Both extremes (all allotment accounting done at Headquarters Marine Corps or at the lowest possible level in the field) have been tried. The accounting for appropriated funds at the Force level will have all the advantages of centralization while being at a low enough level to enable this Headquarters to supply the field with the performance data to apprise the subordinate commander of the progress of his various programs.

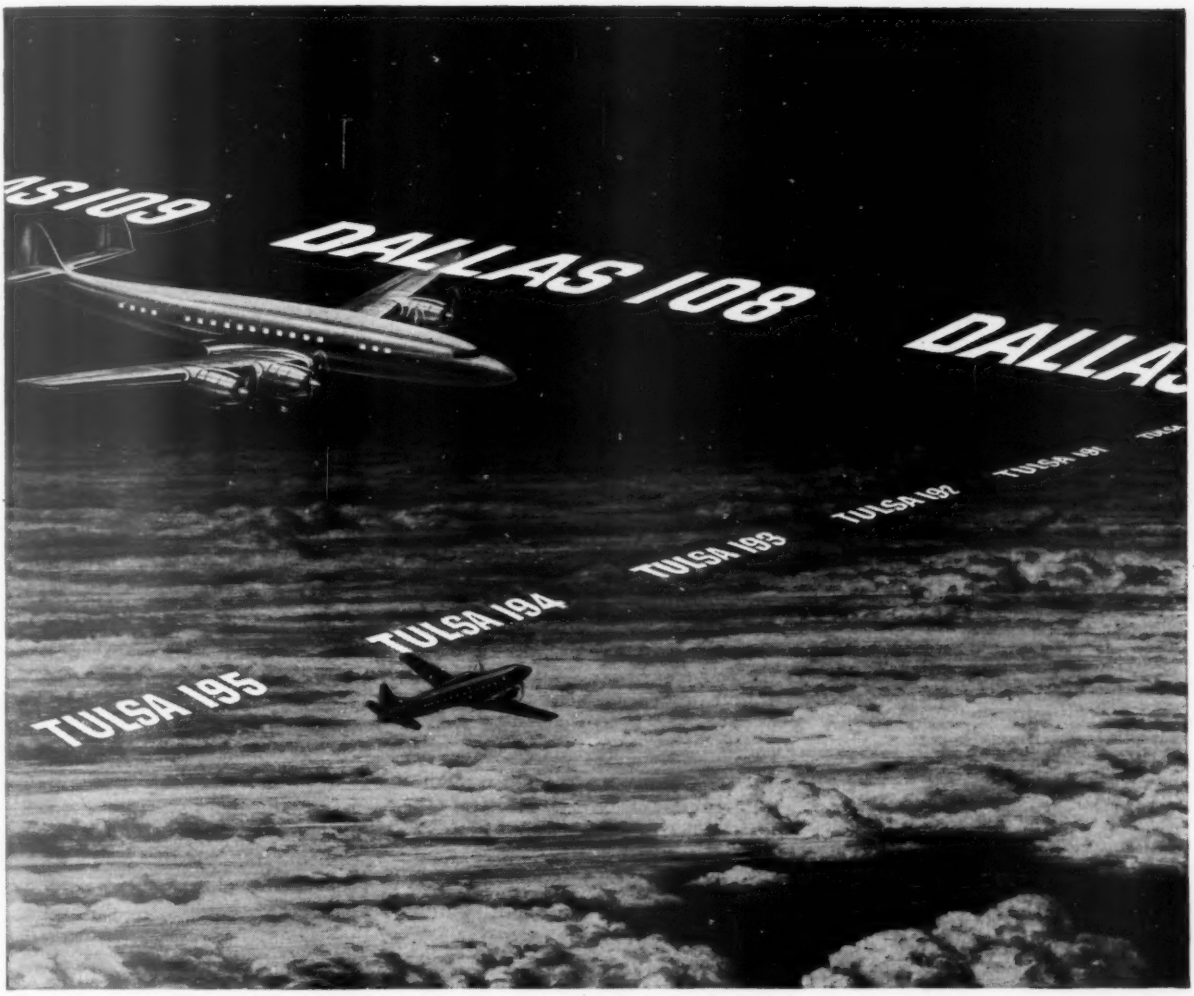
Our Management Improvement Program has paid off in reduced waste and inefficiency. Fleet Marine Force, Pacific intends by a more vigorous self-examination in the future to make even greater gains in economy, effectiveness and efficiency with a resulting increased capacity for the performance of our mission.

Defense Shipping Speeded

A million dollar freight terminal was opened by Navajo Freight Lines, Inc. in Denver, Colorado, to speed service.

The Denver terminal is the third major new facility to be opened by Navajo in the past 18 months, following the Chicago, Illinois, and Albuquerque, New Mexico installations.

Navajo now serves the area from Oakland-San Francisco to Texas points on the south and through to the Fort Wayne, Indiana industrial zone on the east.



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What the Symposium Can Do for Management

Signal Corps Engineering Laboratories feels the symposium gets results in 5 management areas. Here's how and why—

AT ARMY'S Signal Corps Engineering Laboratories we sponsor a major symposium[1] almost monthly. And SCEL representatives participate in other symposiums with what seems to be an ever increasing frequency. Confronted with these facts management logically should ask such a question as, "What good purpose do these symposiums serve?" or "How does the Government laboratory gain from the symposium?"

Dr. Harold a Zahl, Director of Research at SCEL, hastened to say, "These symposiums are a service to the Nation. They give (1) a cross-fertilization to ideas both within and without, (2) they provide for a technical interchange, (3) they present an opportunity to display leadership, (4) they result in favorable publicity, and (5) they provide outside contacts that are most certainly beneficial to the organization."

With this statement as a guide we probed into SCEL's past experience and knowledge for examples which would illustrate the contentions made; even an example of a "service to the Nation" was sought. Obviously our first look was directed to some SCEL sponsored symposiums.

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[1]The term "symposium" as used in its broad sense herein, includes formal group discussions of technical phases of research and development generally involving an attendance of several hundred people with both military and civilian participation.

By Brig. Gen. Earle F. Cook

Cross-Fertilization

An example of what has become a specialized annual affair is the Wire and Cable Symposium. Its aims and discussions are directed exclusively to wire and cable research problems, including the problems of insulation and insulating materials. Here are the attendance figures for this symposium for the four-year period 1952-55:

	'52	'53	'54	'55
Registration				
Organizations	58	112	167	243
Individuals	135	443	562	703

Each year more and more favorable comments are received about this symposium. Each comment lays stress on the value received from the technical information presented. Here is cross-fertilization which SCEL and industry feels is beneficial.

Again the increasing number of organizations and individuals participating indicates that industry recognizes and accepts this symposium as worthwhile; industry soon withdraws support from that which does not pay off. And if we had all 703 participants to deal with separately at SCEL we would be hopelessly swamped. The symposium makes this personal contact possible even though it be a contact en masse.

As a comment on this symposium a letter from a major plastic manufacturer abroad contains the statement that "The symposium is undoubtedly an outstanding event of the year for plastic manufacturers and users."

Technical Interchange

Recently SCEL sponsored a symposium on atomic and nuclear resonance.

It is encouraging to record here that in the short time which has elapsed since the symposium three researchers from widely separated parts of the country have indicated independent approaches to the solution of major technical questions raised at the symposium.

These research approaches can be interpreted as direct indications of that "service to the Nation" though the matter is so current that no tangible results can be cited at this time. Thought processes are at work, however, and we must credit the symposium with this specific accomplishment.

And the research director of one of America's leading electronic manufacturers wrote: "The field is such an attractive one for research that we have decided to search for fields of application which would justify a larger allocation of effort on our part than we had at first contemplated."

As for university thoughts—the SCEL Liaison Officer at MIT reported that "Professors Ramsey of Harvard, Strandberg, Zacharias, and Dr. Peter of MIT . . . had some nice comments regarding same (the symposium).

The concensus was that the symposium was very stimulating from a scientific standpoint, timely, and of great value in promoting the exchange of relevant information, theories and ideas."

Military Before People

When we examined the list of participants we realized that SCEL symposiums are acquiring a greater international following each year. Thus far, in addition to U.S. representatives we have had representatives of Australia, Belgium, Canada, France, Great Britain, Japan, Switzerland, and West Germany in attendance.

With respect to keeping the military before the public, of securing worthwhile favorable publicity, and of providing some first-hand knowledge to industry we considered the 31st session of the 1956 IRE National Convention as an ideal example.

In this instance the author took advantage of an invitation from the IRE Professional Group on Military Electronics to serve as chairman at a two-hour session on the subject of "Nuclear Effects on Electronic Systems." Four papers, each by a SCEL representative were presented at the session. The talks

and material presented had to be carefully screened and the necessary clearances obtained. Though no question periods were permitted as a security precaution, industry and interested engineers were given factual information which in general they could obtain otherwise only with difficulty, if at all.

When the SCEL group considered the question of classified symposiums they were prepared to argue that the symposium offers a most desirable solution for making classified information known to selected groups who have a "need to know." Published classified material too often does not receive the circulation it warrants; those necessary security regulations are not conducive to this essential technical interchange. No one has, up to now, successfully promulgated a security regulation which insures that the papers are published and the needed dissemination accomplished. The symposium is not an approach to avoid or defeat the security regulations but rather it is a legitimate means to accomplish a really essential end.

There was considerable discussion concerning the amount of time to be devoted to discussions and questions following the presentation of a paper. In some cases no time was provided for discussion: in other cases no limit was set on the discussion periods. But the conclusion reached was that there is no really approved solution for discussion periods.

Old Ideas Challenged

In at least one instance within SCEL recently, several principles which have been accepted up to now in a relatively new field were challenged during a symposium discussion period. The result is that this relatively small group of competent researchers is now re-examining some fundamental assumptions. This re-examination may well lead to the discard of considerable work already done and a reorganization of work to be done. Give this symposium credit; the discussion may lead to new concepts and results which thus far have escaped the scientist. The least that will result is a confirmation that SCEL's original assumptions are still valid.

From a technical viewpoint the group felt that the symposium serves as a stimulus to researchers in the preparation of papers for presentation and publication. The scientist who accepts the challenge is inspired to his greatest effort and the fact that the symposium schedule is quite inflexible is a spur to getting the paper prepared to meet the deadline.

And although most of the papers presented at the symposiums are published and thus become available as a source of technical information in many instances this publication is an EVENTUAL rather than a NOW accomplishment.

In commenting on this delay Dr. Harry S. Rogers, President of Polytechnic Institute of Brooklyn, stated that the speed of progress today, particularly in the electronic field, necessitates symposiums because the publications of papers is far too slow.

Perhaps we can best summarize the symposium as a technical gathering which brings into focus not only the WHY and HOW and WHO is doing WHAT and WHERE he is doing it but it presents the material NOW. This NOW of course is the answer to that all-important WHEN. And the audience generally may question the author in a manner more informal and perhaps more revealing than what might result from an exchange of correspondence based on a published paper. Even those approaches which do not yield a positive result are discussed. This is a distinct advantage since papers are not generally published or even prepared on what did not give a beneficial result, and any knowledge gained as to what others have tried even with negative results is helpful knowledge to the researcher.

Disadvantages

Thus far what is stated is on the positive side. What is the other side of the picture? Several disadvantages are indicated.

Quickly summarized these are the symposium 1) can be disruptive of normal routine, 2) does not as a rule culminate in a clear-cut statement of what should be done next, 3) may eventually decrease interest in the meetings of national societies and, 4) conceivably could pervert the basic mission of an organization.

As illustrative of the problem covered in (1) above there are the tedious and myriad problems in arranging for the meeting place, the printing of programs, the banquet arrangements, and that ever-present cocktail hour[2] to be planned. And in addition the difficulties in getting the papers collected and assembled for final printing takes time, effort, concern and worry.

To aid in some of these areas SCEL has a published Standard Procedure governing symposiums which includes an elaborate checklist.[3] This administrative aid is well received and certainly provides a handy reminder of the things to be

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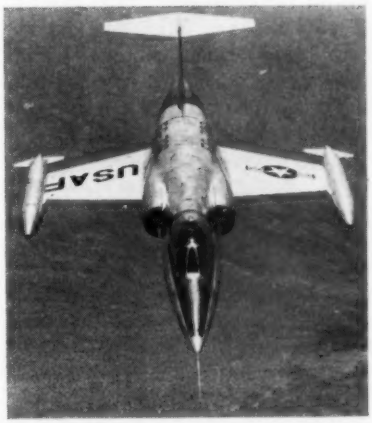
[2]Neither the cocktail hour nor such ancillary activities as midnight hamburgers, poker-table disagreements, burlesque shows et cetera are to be sold short as effective means of communication and the establishment of personal bonds which may be of tremendous value in the event of national emergencies.

[3]A copy of this Standard Procedure will be furnished anyone on request to the author.

Air Force Assigns Starfighters



America's fastest and highest flying jet fighter, the ultrasonic F-104A Starfighter, will see first service with key Air Defense Command units, starting "in the near future," the U.S. Air Force announced recently. Photos of the Starfighter are restricted to the XF-104 prototype, shown here. A day-and-night fighter capable of climbing as fast as it flies straight and level, the lance-like Lockheed jet features the thinnest and shortest wings of any fighter in the world. Those stubby wings, only 7½ feet long, are sharp enough to cut. Adding to the airplane's "look of tomorrow" is its high, T-shaped tail. A two-seat fighter designated the F-104B and an RF-104 photo-reconnaissance version are also in quantity production at Lockheed's California Division plants.

done to make the symposium go smoothly. Based on our examination into the question of the symposium this Standard Procedure received a careful working over. Perhaps this review was one of the most beneficial results of examining the basic problem.

Objection (2), if we can call it an objection objectively is a recognized fact; specific direction of effort almost never comes from the symposium, rather many ideas may be implemented or considered separately or simultaneously as a result of the symposium. In the case of research effort, however, specific direction is not desirable and is not sought.

The third objection may be explained by reverting to the discussion of published papers. Thoughts were expressed that the many symposiums with their individually or collectively published papers multiplies the sources to which one must go for technical information. Perhaps the published papers would have appeared in "Proceedings" of some National society were it not for the fact that the symposium drained this material into a more highly restrictive area. If the number of sources were kept to a minimum the researchers' job would be simplified. Also because the articles are published outside the "Proceedings" many general researchers do not receive the material from which they too might receive worthwhile assistance.

With respect to perverting the basic mission we feel there is this possibility: that time, effort and material may be spent in working up ideas and presentations solely as something nice to present to a group but which presentation contributes only superficially if at all to the real basic mission.

In looking objectively at the ever increasing frequency of the symposium we see what appears to be a danger sign; at three recent symposiums at which SCEL representatives were present either as members of the symposium group or as a part of the audience there was a considerable number of substitute speakers. Could it be that the demands of the symposiums on the time of individuals has become too great? We are not sure and could not answer the question conclusively. What we do know, however, is that here is something that will bear watching by management to see that the symposium does not get out of hand with its demands on personnel.

At SCEL sponsored symposiums we try to prevent any advertising or product presentation taking place in close proximity to the meeting place. And generally there are no product exhibit rooms immediately adjacent. One human interest incident in this connection is worth relating. At a SCEL sponsored symposium a representative of industry placed advertising matter on the seats just ten minutes before the hall was opened for a session. He had been told in plain words shortly before this act that such advertising was not permitted, and so he had the dubious pleasure of removing the material in the remaining few minutes before the session started. It seems that one of our symposium leaders was watching the hall and had seen the young fellow placing the material on the seats. As for the culprit—just the case of a young fellow trying to do his job.

In summary: this was really management's first look-see into the symposium at SCEL. In the future another management look-see may be in order. Perhaps what we have really gained is an appreciation of what the symposium can do, and those with whom discussions were held are now aware of management's interest. Future reviews of the question can therefore be more objective and more specific; we are better prepared to direct future examinations of the problem, and better prepared to answer future questions.

Finally, from a talk at an Armed Forces Regional Industry symposium there is this remark of J. Lewis Powell of the Office of the Assistant Secretary of Defense: "For sustained readiness: the military must always know WHO can make WHAT, how much he can make, how fast. Industry must always know—what military agency wants WHAT, how much, how soon." And as the convention, symposium or technical meeting are all recognized and established means of accomplishing this interchange we feel that symposiums will be with us for a long time to come, always, we hope, as a "service to the Nation."

Firebee Sets Records

The newest, high altitude version of Ryan Aeronautical Company's famed Firebee jet drone target missile has set an endurance and altitude record at Holloman Air Development Center, Alamogordo, N. M., it was announced jointly by the Air Force and Ryan.

An XQ-2B experimental Firebee soared to 53,000 feet and remained in the air on remote control for one hour and 44½ minutes before it was recovered by its own parachute release system which safely lowered it to the desert floor.

Propeller Not Out-dated

The airplane propeller, far from being rendered "old fashioned" in this age of jet propulsion, continues to churn its way to increasing use and efficiency, says an aviation industry engineer.

Anthony F. Dernbach, chief development engineer for Hamilton Standard, division of United Aircraft Corporation, declares, "Today there exists a vigorous propeller industry, and a vigorous propeller-driven development program, with no end in sight."

The Hamilton Standard engineer said today's continued development of the propeller is due to its superior efficiency, compared to pure jet propulsion.

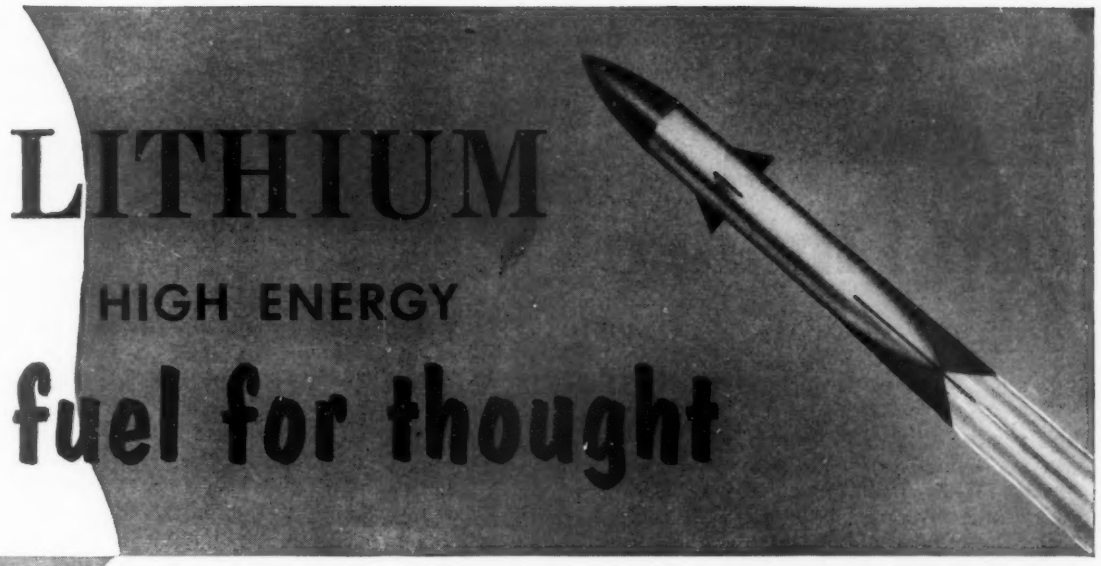
New Wind Tunnel

Republic Aviation Corporation has announced the signing of a contract for the design of a new million-dollar wind tunnel facility that will help the company in designing aircraft to fly at speeds of up to 3,000 miles an hour.

Army Schedules Command Post Field Exercises

Ft. Bragg, N. C. (AFPS)—More than 20,000 troops from posts throughout the country will participate in Exercise King Cole March 27 to April 16 in Louisiana.

It is planned as a command post exercise to test staffs in their functions.



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Business and Finance

by W. Mac Stewart

People, Products.....and YOU

If you are an average American, you are living better, more comfortably, today than your counterpart in other nations, and than your father did at your age . . . and far, far better than your great-grandfather did. To what do you attribute your improved standard of living? Democracy? Yankee ingenuity? Abundant natural resources? Certainly, all of these have played a part. But one of the major factors in our economic progress, and perhaps the most valuable resource of our country is *people*, and their activities. More important, do you realize what effect population trends will have on you and your family in the next few years? Your way of life . . . your income . . . will depend, to a large measure, on the direction of these population trends. To explain this, let's take a quick look at what has been happening to this nation of ours:

The most noticeable trend has been the increased population. Today, there are *44* Americans for every *one* at the time of George Washington's inauguration as our first president! In about 175 years our population has *doubled* itself more than five times. But surely, this could not be the entire basis of our economic growth, as witnessed by the comparative poverty of the Asiatic countries, whose population growth is even greater than ours.

The nature of the American people is to constantly seek improved standards of living. This has been a component in two other important population trends: One is the increase in the number of households. In the early days of our nation, a household often consisted of several families, usually related, banded together for protection and out of economic necessity. As danger lessened and economic conditions improved, the trend was toward fewer families to a household. Then World War II, with its "doubling up" of families temporarily halted that trend. However, since that time we have seen our greatest increase in family units—some 11,000,000—far out-stripping the rate of population growth. The rate of household formation will probably continue to exceed the rate of increase of the population. This factor is important to our economy in that each new household is a consuming unit that must be supplied with housing, furniture, appliances, and other needs.

The other major trend that resulted from the desire for improved economic status is the *mobility* of the population. In the last two or three decades we have become almost a nation of nomads. One part of this has been the migration from rural to urban areas. In Washington's time, only 5% of Americans lived in cities, compared with approximately two-thirds today . . . and this trend is continuing. But the rural-to-urban shift is just part of the story. A sampling made in 1950 showed that *one* out of every *six* of us lived in a different house than we had in the *previous year!* While some of these moves were of short distance, as from metropolitan areas to suburbs, one-sixth of these restless ones moved to a different state. Think, for a moment, of all the industries that are affected when just one family moves . . . or even takes a vacation trip!

These sweeping changes in our population—its over-all increase, migrations and mobility, and household formations—much of this caused by a constant seeking of improved living environment, have loosed forces far more powerful in their effects than would be thought possible. Now let's see what the effect has been upon American industry, and how it will effect you within the next ten or twenty years:

In the economic circle, an economy is wrought by its people, and should exist to serve its people. Thus, the population both produces and consumes. As the population increased, more goods and services were needed to clothe, feed, and house these people. Production capacity had to be increased. Gross national product (total of all goods and services produced annually) rose steadily. More employment, and higher living standards resulted. With higher living standards, there was demand for more luxuries, as well as necessities, requiring further increase in production of goods and services. And we start around the circle again.

This is an oversimplification of our economic growth, as many other factors played a part—technological advances, wars, foreign trade, resources, our competitive enterprise system, and many others. But it is likely that population trends and the rising demands of the people have been a major motivating factor.

But what about the future? What will happen to our population . . . to industry . . . and what does it mean to you and me? It is predicted that by 1965—just eight years from now—our population will be 190 million . . . there will be 174 million jobs (far more than the men available to fill them) . . . our gross national product will exceed *$560 billion!*

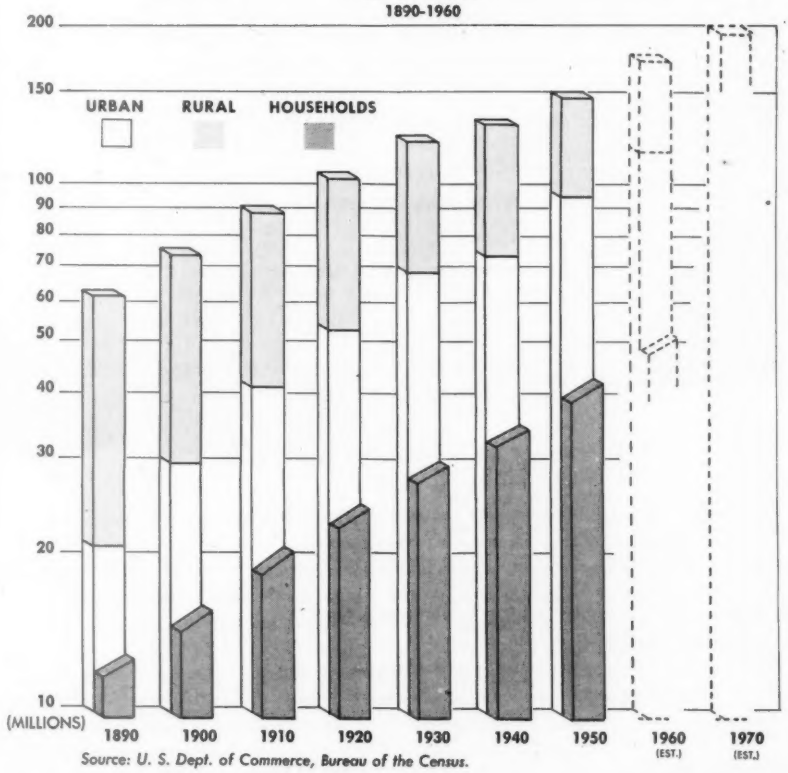
Where will the money for this

Financial Editor W. Mac Stewart, one of the nation's foremost securities analysts, is vice-president—research, Hamilton Management Corp. In addition to presenting a monthly financial editorial written expressly for the Career Officer, Mr. Stewart will personally answer your questions on investment problems. Be sure to include your mailing address, as inquiries will be answered by mail, rather than on this page.

tremendous expansion come from? As in the past, industry itself will be able to supply only part of that capital. They must go elsewhere for much of it: to institutions, such as banks and insurance companies . . . and directly to the public—you and me. Even more than in the past, the average American citizen will take part in American industry, putting his money to work to help build the factories, conduct the research, improve the distribution . . . and share in the rewards. This expansion of industry will provide excellent investment opportunities in the coming years for the wise investor. More disposable income will make it possible for additional millions of average citizens to "go into business" with the industrial giants of America. Today there are an estimated 8,670,000 shareholders—over 8% of our adult population. Think what that figure may be 20 years from now!

Our nation is on the threshold of the greatest era of growth and *personal prosperity* that the world has ever seen. The accomplishments of the past *hundred* years will probably be dwarfed by the giant gains of the next *twenty* years. Automation and other technological advances will increase worker productivity . . . resulting in higher income for you, shorter work hours, more leisure time, and a higher standard of living than any nation on this earth has ever known. If you think this is a dream, you should peek at the drafting boards, and into the laboratories, of dozens of the major corporations. They are planning a future for you and me that is almost beyond our comprehension! Yes, our system of democratic capitalism that has transformed us from an uncharted wilderness to the world's greatest power in the short span of two hundred years, will bring even greater economic benefits to us and our children in the years to come.

POPULATION (URBAN AND RURAL) AND HOUSEHOLDS
UNITED STATES
1890-1960



Source: U. S. Dept. of Commerce, Bureau of the Census.

This chart clearly shows three important population trends: (1) The population growth of the United States, (2) The rural-to-urban migration, and (3) The rate of increase in households, which is greater than the rate of population growth.

Cruiser to Convert To Guided Missiles

Washington (AFPS)—The cruiser Little Rock will be converted to carry guided missiles at a cost of about $14 million, according to the Navy.

The 10,000-ton ship will be modified to launch Talos surface-to-air antiaircraft missiles aft, while retaining her conventional armament forward.

Launched in August 1944, and commissioned 10 months later, the Little Rock was "mothballed" in February 1949.

Two guided missile cruisers, the Boston and Canberra, are presently serving with fleet units.

Loading To Be Speeded

Airline baggage handling is on the threshold of the Push Button Age. Seeking a major breakthrough in baggage service, Lockheed and American Airlines are conducting operational tests with a mechanized system of pre-loaded bins designed to speed and simplify on- and off-loading.

Lockheed developed the system for American to take full advantage of the propjet Electra's 10-to-12 minute ground time at intermediate stops. Because the Electra does not require refueling at most stops, its ground time will be considerably shorter than for current aircraft.

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Title and Location	Grade	Remarks
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Electrical Engineer	GS-9 or GS-11	
Mechanical Engineer	GS-9 or GS-11	
WADC, Wri't Pat. AFB, Ohio		
Weapon Systems Engineer (Plans & Program)	GS-14	
Electrical Engineer	GS-13	
Gen Ordnance Design Engineer	GS-13	
Power Plant Engineer	GS-13	
Supvy Aero Engineer (Flutter & Vibration)	GS-13	3 vac.
Aero Development Engineer	GS-12	
Aircraft Preliminary Design Eng	GS-12	
Aircraft Stability & Control Eng	GS-12	
Electrical Engineer (Instrumentation)	GS-12	2 vac.
Electronic Engineer (Gen)	GS-12	
Gen Eng (Grnd Elec Power Systems)	GS-12	
Rsch Physiologist	GS-12	
Aero Rsch Eng (Flutter & Vibration)	GS-11	
Aircraft Design Eng (Ejection Seats)	GS-11	
Aircraft Design Eng (Integral Tanks)	GS-11	2 vac.
Aircraft Modification Design Eng	GS-11	
Ceramic Engineer	GS-11	
Construction Manag Eng (Airfields)	GS-11	
Dynamics Loads Engineer	GS-11	
Elec Engineer	GS-11	
Electronic Engineer (Gen)	GS-11	
Elec Eng (Instrumentation)	GS-11	
Gen Eng (Bombing Systems)	GS-11	
Gen Eng (Standardization)	GS-11	2 vac.
Industrial Designer	GS-11	
Mech Eng (Oxygen Equip)	GS-11	
Photographic Eng (Mechanical)	GS-11	
Aero Dev Engineer	GS-9	2 vac.
Aircraft Design Eng (Air Crew Stations)	GS-9	
Elec Eng (General)	GS-9	2 vac.
Elec Eng (Instrumentation)	GS-9	
Elec Eng (Radio)	GS-9	
U.S. Marine Corps, Supply Center, Albany, Georgia		
Analytical Statistician	GS-10	
Mechanical Engineer	GS-9	
Alaska Com. System, 550 Fed. Office Bldg., Seattle 4, Wash.		
Electronic Technician	GS-12	Duty Station Anchorage, Alaska
Wri't Pat. AFB, Ohio		
Actuary (Property)	GS-12	
Ind Engineer	GS-12	4 vac.
Actuary (Property)	GS-11	2 vac.
Gen Supply Officer (P & A)	GS-11	
Medical Officer (Gen Med & Surg)	GS-11	
Supv Budget Administrator	GS-11	
Supply Officer (P & A)	GS-11	4 vac.
Systems Accountant½	GS-11	
Architectural Engineer	GS-9	
Mech Engineer	GS-9	2 vac.
Structural Engineer	GS-9	
United States Coast Guard, Washington 25, D.C.		
Electronic Engineer (Radio)	GS-9	Norfolk, Va.
Architect (General)	GS-11	Cleveland, Ohio
Electrical Engineer	GS-11	San Francisco, Calif.
Aeronautical Engineer	GS-14	Washington, D.C.
Naval Architect	GS-9	
Lighthouse Engineer	GS-12	
Chemical Corps Training Command, Fort McClellan, Ala.		
Chemical Warfare Specialist	GS-13	
Biological Warfare Specialist	GS-13	
Educational Specialist (Course Material)	GS-11	
Publications Editor (General)	GS-9	
Aberdeen Proving Grounds, Aberdeen, Maryland		
Supervisory Publications Writer	GS-12	
Publications Writer (General)	GS-11	
Vance AFB, Okla.		
Firefighter (Gen)	GS-9	
Trng Instr (Weather Meterology)	GS-9	
Webb AFB, Tex.		
Gen Engineer	GS-9	
Whiteman AFB, Mo.		
Education Officer	GS-9	
U.S. Naval Mine Depot, Yorktown, Virginia		
Medical Officer	GS-12	
Position Classifier	GS-11	
General Engineer	GS-9	
Mechanical Engineers	GS-9 and GS-11	
Electrical Engineers	GS-9 and GS-11	
Supervisory Chemical Engineer	GS-11	
Randolph AFB, Tex.		
Biochemist	GS-12	
Mgmt Analyst	GS-12	
Mgmt Analyst	GS-12	3 vac.
Constr Mgmt Engr (Air Flds)	GS-11	
Mech Engr (Air Cond & refrig)	GS-11	
Mgmt Analyst (Financial)	GS-10	
Supv Accountant	GS-10	
Tab Project Planner	GS-10	
Civil Engineer (Grnds & Pavmt)	GS-9	
Civil Engineer (Gen)	GS-9	
Historian (Nat'l Defense)	GS-9	
Robins AFB, Ga.		
Medical Officer (Occupational Medicine)	GS-12	
Elec Eng (Wire Communications)	GS-12	
Systems Analyst & Elec Equip Prog	GS-11	2 vac.
Systems Deve Analyst Elec Proc Equip	GS-11	
Historian	GS-9	
Mechanical Eng (Tools and Shop)	GS-9	2 vac.
Elec Eng (Wire Comm)	GS-9	
Mech Eng (Gen)	GS-9	
Ind Engineer	GS-9	2 vac.
Aero Eng	GS-9	
Industrial Eng (Shop Methods & Procedures)	GS-9	5 vac.
SBAMA (Los Angeles, Cal.)		
Tech & Engr Data Speclst	GS-9	
Contract Specialist	GS-9	
Freight Traffic Off (Gen)	GS-9	2 vac.
U.S. Marine Corps, Washington 25, D.C.		
Management Analyst (Engineered Time Standards)	GS-12	
Operations Analyst	GS-13	
U.S. Marine Corps Base, Camp Pendleton, Cal.		
Supervisory General Engineer (Hydraulic and Sanitation)	GS-9 and GS-11	
Civil Engineer	GS-9	
Architectural Engineer	GS-9	
Supervisory Mechanical Engineer	GS-11	
U.S.N. Military Med. Supply Agy., 84 Sands St., Brooklyn, N.Y.		
Bacteriologist	GS-9	
Supply Cataloger (Medical Equipment)	GS-9	
Electrical Engineer	GS-9 and GS-11	
Librarian	GS-9	
Wright Air Development Center, Ohio		
Aircraft Flutter and Vibration Engr.	GS-11	
Aircraft Modification Design Engr.	GS-11	2 vac.
Ceramic Engineer	GS-11	
Dynamic Loads Engineer	GS-11	
Electrical Engineer	GS-11	3 vac.
Electronic Engineer (General)	GS-11	
Electronic Engineer (Instrumentation)	GS-11	2 vac.
Electronic Engineer (Radio)	GS-11	6 vac.
Electronic Scientist	GS-11	
Flight Test Engineer	GS-11	
General Engineer (Bombing Systems)	GS-11	
Geodetic Engineer	GS-11	
Industrial Designer	GS-11	
Mathematician	GS-11	2 vac.
Mechanical Engineer (Oxygen Equipment)	GS-11	
Supv. Mechanical Engineer	GS-11	
Systems Analyst (Logistics)	GS-11	
Aerodynamic Development Engineer	GS-9	
Aeronautical Engineer	GS-9	
Aeronautical Rocket Power Plant Development Engineer	GS-9	
Aircraft Design Engineer (Air Crew Station)	GS-9	
Analytical Statistician (Engineering)	GS-9	
Chemical Engineer	GS-9	
Electrical Engineer	GS-9	

(*Continued on page* 35)

What does it do between

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For the first time the behavior pattern of a free space Moving Target can be directly calibrated and immediately evaluated!

The proof of any guided missile is its performance. Not only is it necessary to provide accurate trajectory data in order to determine its effectiveness, but this must be made immediately available.

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In the past, this data has depended upon optical devices, triangulation systems with long base lines and precision limitations, modified radar equipment and data reduction methods often requiring months for computation. The immediate availability of data evaluation provided by the AN/FPS-16, now being built by RCA under cognizance of the Navy Bureau of Aeronautics for all services, is a great forward step in Range Instrumentation.

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ON CAPITOL HILL—

What the Cordiner Proposals Can Mean to You

MUCH HAS been written in the past two months concerning the recommendations of the Committee headed by Mr. Ralph J. Cordiner, President of the General Electric Company, appointed by the Secretary of Defense in May 1956, for the purpose of examining the problem of technical and professional compensation in the armed forces. A general impression seems to be current in military circles that a substantial increase in pay will be forthcoming for nearly all military personnel as the result of the recommendations of this Committee. ARMED FORCES MANAGEMENT must undertake the task of placing the Cordiner recommendations in their proper prospective.

While the pay proposals of the Cordiner Committee are naturally of primary interest to all military personnel, such proposals are only a part of the recommendations of the Committee and do not provide a full solution to the problems considered by the Committee. Although entitled "A Committee on Technical and Professional Compensation," the actual mission of the Cordiner Committee was to determine reasons for the loss to the services of highly qualified technicians and leaders both officer, enlisted and civilian, and to make recommendations to correct this situation.

In spite of actions taken during the 84th Congress in the passage of legislation such as the Career Incentive Act, Survivor Benefits, Dependents' Medical Care, Career Incentives for Doctors and Dentists, and many other laws of importance to service personnel, all branches of the armed services have experienced and are experiencing a loss of highly skilled people which, if continued, will result in an impairment in the ability of the armed services to discharge their combat assignments.

The problem is well illustrated by the experiencec of the Strategic Air Command where, according to spokesmen at SAC Headquarters, 123,529 enlisted men were processed last year in order to gain 3,149 men and, at the end of the year, SAC found itself with more inexperienced men than when it started. The officer experience of SAC is similar. On June 1, 1956, SAC had a requirement for 29,396 officers. Only 26,809 officers were on board to meet this requirement. Of these, only 16,270 were qualified as pilots, navigators, radar specialists and other "hard skills" essential to the performance of SAC's missions. Over three-fourths of SAC's B-47 commanders are now over 33 years old. These men have a tremendous expeirence but they are moving into the age bracket which soon will disqualify them for the performance of active combat missions. Behind this group a serious slump, particularly evident in the 4 to 14 years service group, exists. This same deficiency in the officer structure is evident in all services, reflecting the fact that officers in this age group are not remaining in the services beyond their 3-year obligated period of service in numbers necessary to insure a high degree of combat effectiveness in the future.

Unquestionably, one of the major reasons for the loss of highly skilled and technical persons from the armed services—both officers and enlisted men—is because of the opportunity for employment in industry of such persons at higher wages than are offered in the services. Thus, a crew chief with four years' experience, receiving base pay at the rate of $163.80 per month, will think twice before reenlisting when he has an opportunity to earn $450.00 per month doing the same job for a commercial airline. Similar advantages are available to younger officers, particularly those with scientific or professional experience.

The Cordiner Committee recognized these facts and its recommendations for pay increases are designed to bring service compensation more in line with the rates paid persons with similar skills in industry. More basic to the problem, however, was the committee's recommendation for a modification of the outmoded system of pay based on length of service used in the armed forces, to a system of pay based on responsibility and skill, as is generally the case in industry. Certain aspects of this change of concept have been overlooked in the pleasant contemplation of a pay raise. These aspects must be considered as an essential part of the package.

In all the hub-bub of the National Guard controversy a very significant part of Secretary Wilson's testimony before the House Armed Services Committee on January 28 appears to have been forgotten. He stated,

> "Our emphasis has shifted to the retention of individuals with the special military qualifications to meet the increasing demands for technically qualified individuals and competent leaders."

In other words, not only will increases in pay, based on longevity, disappear if the Cordiner Committee proposals are adopted, but a vigorous program to eliminate mediocre and unfit officers from the services may be expected as a natural corollary. Similar emphasis on quality will result in controlled enlistments in order to insure that the necessarily limited number of spaces available are filled by persons who can contribute most to the performance of the mission of the unit concerned.

Other provisions of the Committee's recommendations involve actions to encourage selected reserve officers to remain on active duty and to provide additional incentives to civilians in executive and top-management positions.

In spite of the basic soundness of the Committee's proposals and the obvious need for corrective action, a number of extremely hard nuts

remain to be cracked before the legislative and administrative actions contemplated are accomplished facts.

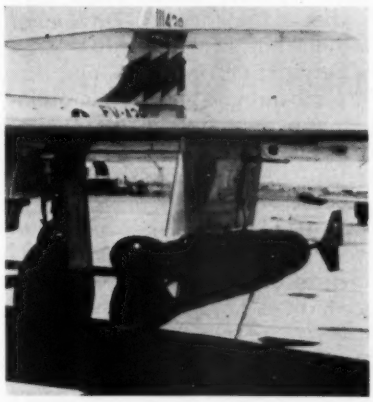
With a Defense budget in the vicinity of $38 billion and a national budget in the vicinity of $70 billion, the Bureau of the Budget may be expected to take a long, hard look at any proposals which have been estimated to cost in the neighborhood of $650 million. It also is significant that the bulk of the cost is occasioned by the proposed pay increases for enlisted men.

The history of service pay legislation at the Capitol indicates that Congress is more sympathetic to pay raises for enlisted men than for officers. In fact, the very compression of the officers pay structure which the Cordiner Committee seeks to remedy has resulted from the fact that the Congress has seen fit to grant more generous raises to enlisted men and junior officers than to those in the higher ranks. There is no reason to believe that this traditional position of Congress has changed. In fact, the Chairmen of both the Senate and House Armed Services Committees have indicated possible favorable consideration of the proposals respecting enlisted technicians but have been significantly silent on pay increases recommended by the Cordiner Committee in the officer grades.

Should the Administration approve and press for the enactment of the Cordiner proposals, it will be in the position of placing the cart-before-the-horse on the basis of past service pay increases. Heretofore, revision of military pay statutes has followed—not lead—raises won by labor from industry, and the enactment of laws granting pay increases for the classified civil service, postal workers and others, Thus a precedent would be established by the enactment of the Cordiner pay proposals at this time which could be used by other groups both within and outside of Government in urging pay increases for their own members. In the light of warnings by Secretary of the Treasury Humphrey and Ex-President Hoover, it seems extremely unlikely that the Executive Branch of the Government would favor action at present so likely to lead to a wage increase spiral with resulting increased inflationary pressure on the national economy.

On January 28, Secretary Wilson expressed the hope that the Cordiner proposals would be "ready for processing through the Executive Branch within a matter of days." Our experience has indicated that this hope, while certainly genuine on the part of the Secretary of Defense, is most difficult of accomplishment. As we go to press, no legislative proposals based on recommendations of the Cordiner Committee have yet reached the Capitol.

Five-mile 'Fish Line'



A fisherman's dream came true—a five-mile-long steel "fish" line, an air-operated, non-fouling reel dangling a giant-size plastic "fly" and capable of hauling in a 375-pound catch—has been developed for a more serious role in the nation's defense program.

Actually the "fishing" reel system is a new target-tow reel device, called the "Bee-Jay," designed for use in gunnery and rocketry training and missile practice by supersonic jet aircraft.

Developed jointly by the U. S. Air Force and Northrop Aircraft, Inc., the Bee-Jay utilizes five miles of steel cable, a ram-air operated reeling mechanism and a low-drag, highly-reflective plastic, whirling target to provide a challenging target for the Air Force's latest jet fighters.

New Radar Range

Dynamics Corporation of America has announced that its subsidiary, Reeve Instrument Corporation, would build the instrumentation radars for a new flight test range being constructed across the Mojave Desert for the use of the Air Research and Development Command in testing and developing new "X" (experimental) aircraft.

All Atomic Lineup

Three of the nuclear-powered submarines in the Navy's atomic building program are being built side by side on the Groton, Connecticut building ways of General Dynamics Corporation's Electric Boat Division. The atomic trio are Skipjack, Skate and Triton. Skipjack will be the fastest sub ever built and Triton the largest. Skate, scheduled for launching this spring, sits on the same ways occupied by the USS Nautilus, world's first nuclear ship. The marriage of atomic power and whale-like hull design will make Skipjack a virtual "flying" submarine while Triton will incorporate twin nuclear reactors for super power to propel the mammoth radar picket station.

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EDP—
The Modern Management Control

Captain Stein calls Electronic Data Processing Machines the most exciting invention since the telephone and typewriter put together. Here's why . . .

CONTROLLING a ten-billion dollar a year business such as the United States Navy, whose "branch offices" are oft-times every bit as huge and complicated as many of our largest corporations, is more than a full time job in itself.

Overpowering as it may sound, the task of "controlling the Navy" is steadily becoming a good deal easier. At the same time, the comptrollers themselves—in and out of the armed forces—are finding that their contributions to better business management are—and will be — increasingly more significant ones.

The vehicle for much of this process is the electronic data processing machine. Taken with all of its myriad problem-solving adaptations, EDPM is doubtless the most revolutionary and exciting invention since the telephone and the typewriter put together.

To lend a hand to those less familiar with EDPM, I should like to define three general terms which I shall use throughout this discussion.

By Captain Charles Stein

a. What is the difference between an electronic data processing machine and a standard office machine?

Answer: If we were looking only at the mechanics of the machine, I might reply that the only difference is the addition or substitution of vacuum tubes for the usual gears, wheels and moving parts, and that this substitution enables information to be held in an electronic impulse form and to carry out arithmetical functions faster than mechanical equipment. Such an answer would not be a complete reply, for the really significant difference between these machines lies in the ability of electronic data machines to perform three major functions:

1. The ability to store instructions. In conventional equipment, the instructions are given to personnel who place the data in machines and perform certain operations on these data in accordance with the instructions. In EDPM, the machines, rather than the personnel, are instructed, thus enabling the machine to perform the necessary operations without human intervention.

2. The ability to choose different courses of action under different situations. EDPM are so constructed that they can "recognize" situations which call for certain courses of action as contained in the stored instructions. Thus, in these machines, data will automatically have one series of operations performed if certain conditions are met and another series of operations if other conditions are met.

3. The ability to perform sequential operations. In conventional equipment, cards are loaded into a sorter which sorts them. They are then carried, for example, to a collator which collates them. They may then be carried to a computer which performs certain computations on them. No one transaction is, therefore, completed until the entire batch has passed through the procedure. On EDPM, however, each transaction will have all of the various steps performed on it to completion before the next transaction is undertaken. Furthermore, while the first transaction is being processed, the next one may have already commenced. This ability enables transactions to be fed into these machines in a "line flow" rather than in time-consuming batches.

b. What is *integrated* data processing?

Answer: In its broadest and most practical sense, it is the development and operation of a complete system, with the data processing activities of all departments of a business organized into one direct, simplified program. It is based on a completely planned program, utilizing any and all types of office equipment to produce a coordinated, economical, and efficient system.

c. What is meant by "programming"?

Answer: To plan a computation or process from the "asking of a question" to the delivery of the results, including the integration of the operation into an existing system. Thus programming consists of planning and coding, including numerical analysis, systems analysis, specification of printing formats, and any other functions necessary to the integration of a computer in a system.

Machines Are "Means"

It is only recently that an apparent solution to the office methods problem of an expanding work-

load has been given to us by the electronics engineer. Because these engineers designed their original machine as an aid for scientists and mathematicians, there has been a delayed acceptance of the new equipment by office management in general. During the interval of delay there has been a successful conversion of the basic computer system. The machines have now been developed for business data processing and at present give promise of potential application which staggers the wildest imagination of every planner and systems analyst. For management, data processing poses the problem of adapting to new concepts and new methods of operations that require a complete "rethinking" of the purpose, as well as the organization, of entire functions.

Of all the machinery of automation, the automatic high-speed data processing computers have most strongly aroused the curiosity of the public, perhaps, because of the seeming incredibility of their performance. Modern computers deal with words as well as numbers, and can solve simple logical problems as well as complex mathematical equations. Every major advance in speed, accuracy or storage capacity of the electronic computers makes possible the solution of problems that were previously considered unsolvable.

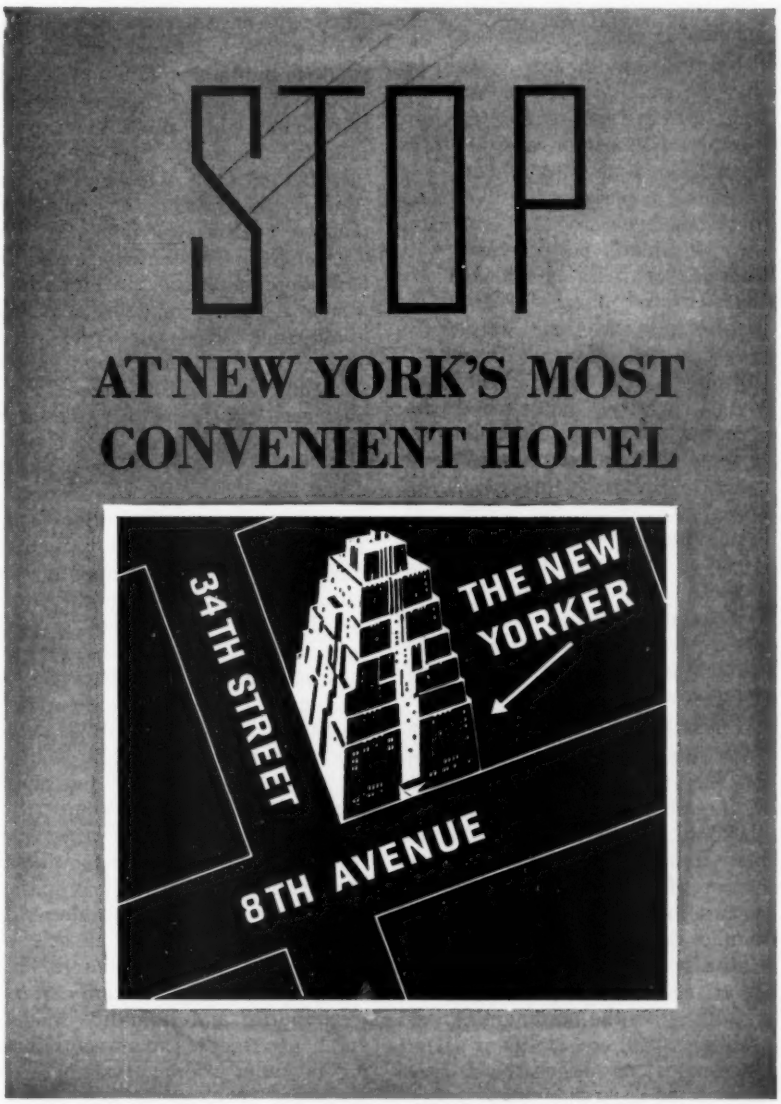
It must be stressed, however, that *the machines are not an end in themselves, but only a means to an end.* In effect, the amazing capabilities of electronics equipments offers a challenge to management personnel; the challenge is one of matching machine capability with systems design ingenuity. In a sense, it would be a waste of the machine's promise if we limited its application to our current system and achieved, not a major breakthrough, but only a speed-up.

Computers Not "Human Brains"

A great part of the "nonsense" spoken and written about automation in the past has suggested that the machinery of automation—especially electronic computers—will replace not only certain of the many functions now performed by humans, but eventually will perform the entire range of human occupation. It portrays automatically controlled machines as "robots"—mechanical men with human facilities. Even responsible scientific journals frequently refer to computers at "giant brains" and "thinking machines", that have such human facilities as "memory", "reason", "choice", "intelligence", and "learning".

The truth is, a machine can calculate, conclude and choose only as it is instructed to do so, and only according to the information, instructions and criteria which man provides. They are so stupid they must be instructed when to stop working! Computers cannot be creative, nor can they be clever; they have neither imagination, volition, nor purposefulness.

This is an opportune time to direct our attention to the possibility and limitations of an electronic business machine. We now know of the machines which are available or are shortly to become available. We know something, also, of the commercial installations of electronic computers during the past year. Further, we know of some of the applications being planned by many of the prospective users of this type of equipment.



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With this data we are able to attempt an evaluation of our own position.

There are now four companies offering large-scale data processing machines designed for general business application. Two of these companies, and at least six *other* companies, offer smaller electronic systems for smaller capacity requirements. In the large-scale equipment field, Remington Rand Corporation produces the "Univac", International Business Machines builds the "700 series", Radio Corporation of America constructs the "Bizmac" and Datamatic Corporation offers the "Raycom". These are the electronic "giant-type" machines.

Nevertheless, it might well be that the smaller machines will become the work-horses of modern business. These machines are produced by companies which have had long experience in the office machines business. Marchant and their "Miniac", Underwood and their "Elecom 125", National Cash Register and their "NCR 303", ElectroData and their "Datatron", Monroe and their "Monrobot", Burroughs and their "E-101", are some who have announced the operating characteristics and costs of their electronic data processing systems. IBM also has a "Type 650" machine in this class and Remington Rand has the new "Univac File Computer" in the smaller machine classification.

It should be noted that in this field there is considerably more competition among equipment manufacturers than in the EAM electric accounting machine field.

Large-scale computers rent from $15,000 to $30,000 a month. Most of the smaller-machines rent from $3,000 to $8,000 a month. While these rentals may appear to limit the use of these machines to large business enterprises, it must be pointed out that there are many relatively small businesses making use of mechanical equipment costing more than the minimum figure. Additionally, there are many large installations of punch card machines involving equipment costing considerably more than the maximum figures for the electronic system. As price competition becomes more of a factor among electronic equipment manufacturers, we will probably see more units built with portable components so that unnecessary "hardware" will be eliminated and only those building blocks distributed which are needed for the specfic installation. With such flexibility, there should be more of a feeling among potential users that they are not purchasing capacities for performing exceptional tasks never to be contemplated within the scope of their application.

Limitations

Any evaluation of a proposal for a change in methods, or new technical or electronic equipment, must assemble for consideration the known limitations inherent in the proposal. A few of these limitations are factors which might deter entry into this electronic method; others are factors to be considered after the decision has been made to acquire such a system.

Those factors which should be considered first are the limitations imposed by the magnitude of the equipment. These are costs, reassignment of personnel, and extent of required system changes. If we disregard for the moment the most important aspect of the Navy's supply function—service to the fleet—the installation of an electronic system can only merit serious consideration if it is a cost reduction device. No basis for judgment exists until a reasonably accurate compilation has been made of the *present* cost to do the work.

A substantial cost will probably be incurred before your computer begins to operate. Weeks of decision are usually followed by months of system analysis and programming. Since this may require the equivalent of up to 50 man-years for the large electronic computer, the cost of this phase of the preparatory work may be considerable.

For equipment such as this, a suitable site must be prepared. The equipment functions within certain temperature and humidity ranges and hence requires an air conditioning or other cooling system. The electronic machine utilizes rather extensive floor space and the maintenance and repair equipment must also be adequately housed. Recent efforts to replace vacuum tubes by transistors may radically alter this picture by reducing power, cooling, and space requirements.

If this equipment results in the displacement of many persons, which may be possible in the larger installations, there may be a twofold solution required. One is to establish, if possible, a policy that no personnel will be dismissed and the other is to disseminate the policy early enough to allay fears and avoid adverse effect on employee morale. Consolidated Edison, Metropolitan Life, Pacific Mutual Life, to mention a few, have made a study of turnover, attrition, and retirement rates and have ascertained that transfers, training and a lower new hiring rate will completely solve this problem. It is difficult to conceive of an organizational unit large enough for a major electronic system which would *not* be able to adjust to the limitation resulting from the necessity for personnel reassignment.

The limitations proposed by the extent of required system changes have many facets. Probably the most important is "getting started". Never before has there been the requirement for such a complete change of methods in such a wide area as is implicit in the electronic approach to data processing. This is a job for imaginative thinkers having the earnest support of top management. Departmental barriers may disappear and existing divisions, branches, and sections may be completely realigned. There will be many instances of resistance (some of them of a political nature) which must be ignored for the common good of the organization.

Another facet of this same limitation is the need for the abilities of trained systems personnel. Since the installation of an electronic system must be preceded by a thorough review of the existing method of accomplishing the proposed application, a well-trained systems group must devote full time to this project. Where the organization already has a permanent methods and procedures group, this limitation may not be a serious one. Where it does not have a system staff, the lack of experienced personnel will present

a determent to further development until a selection and training program has been completed.

There must be a review of the old problem of the relative advanatages of centralization as opposed to decentralization of the record keeping function. This has posed a major problem to users of electronic equipment, since the trend in recent years has been toward decentralization. Now we have a machine with such great capacity that it creates the need for bringing into a central point enough data processing to keep it occupied. Where there has been a costly program of establishing regional record keeping, this may limit to a large measure the amount of work which may be economically assigned to the electronic system. A recent development, the Flexowriter, may be the answer to the problem of assembling data on an area basis. This device punches paper or magnetic tape as a by-product of the typewriting operation associated with the regional record keeping function. This punch tape is the same as communications tape and it can be automatically transmitted from any point in the world to the central office by standard wire networks or mail for immediate processing by the Central Computer. Where there has been decentralization of accounting functions because of the magnitude of the entire processing problem, there may be a real possibility that each of the decentralized area offices might have its own electronic system. All branch offices could then be very closely integrated with the central office system.

Commercial Applications

In a recent magazine article, I learned that at Harvard University, Mark IV, an electro-mechanical machine, has been used to compare thousands of biblical manuscripts in order to discover the chronological sequence in which they were written; the machine uses the gradual changes in text from one era to the next as the basis for classification. In another instance, the 701, a large-scale scientific machine built by the International Business Machine Corporation, is being used by the United States Weather Bureau for experimental weather forecasting. The Census Bureau has need of two large-scale computers in order to provide the myriad of statistical facts requested by government and industry alike.

Less spectacular, perhaps, but no less significant, are the roles computers have played in solving the problems of engineering in industry. The machines are used daily to find the answers to questions involved in the design and testing of aircraft, guided missiles, and warships. Use of an electronic data processor enabled the DC-7 Airliner to fly six months sooner than would have been possible if conventional methods had been used to make all the necessary calculations. Computers also have been used extensively in atomic research, by the Army Ordnance Department in its ballistics studies, by public utilities and by a number of government agencies engaged in research studies.

Surely the most significant application of computers has been to modernize and speed-up office paperwork in American business. The changes have only just begun, but for sometime now, Bell Telephone has been operating an automatic message accounting system which records calls, assigns them to the right subscriber, and computes and prints bills—all automatically. American Airlines is keeping track of ticket reservations on a central magnetic drum "memory" unit. Reservations or ticket orders for any one of 10,000 flights are processed within a quarter of a second after the request is keyed on the local office machine. A number of large department stores have begun to record their sales with electronic "tag readers". A central processor accepts tapes perforated at the points-of-sale by cash register attachments. The processor has been designed for the more efficient sorting and merging of data—which are the most common clerical functions performed on accounting information. Departmental cash balances, accounts receivable, inventory control, and statistical analyses are all obtained at electronic speeds from the central computer.

Another important development in this field was revealed recently when the Bank of America announced that is has tried out and intends to install a $750,000 electronic computer named ERMA (Electronic Recording Machine—Accounting), capable of handling all the records for some 50,000 checking accounts. This machine, being installed at the San Jose, California branch, credits the individual accounts with deposits, debits withdrawals, stores details of all transactions, maintains correct balances, accepts stop payment and hold orders if an account is overdrawn, sorts checks, and prepares the bank statements.

In the payroll application, the computer will extend the mass of time cards and job tickets, sort by employee number, compute gross pay, compute and make deductions to arrive at net pay, and finally re-shuffle all calculated detail to compute labor distribution and labor variances. The computer system will make all calculations, print checks and check stubs, payroll register in detail, payroll journal in detail, and all necessary accounting entries, as well as prepare necessary tax returns.

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Actually, electronic computers of all sizes are being used today by hundreds of corporations for market analysis, billing, inventory control and similar jobs. Yet the revolution has scarcely begun. A little more than a year ago no more than a dozen large-scale data processing machines were on order for business use; today orders for several hundred are waiting to be filled.

It has been said that in the electronic field the true potential of these machines will be realized when they are set to do jobs which have previously been considered impracticable or impossible on small-scale office machines.

EDPM and the Navy

What can electronic data processing do to improve the business management of the Navy? Savings in clerical costs are in no sense the most important justifications of the automation of data processing in the business office. Perhaps one of the most exciting aspects is the greatly increased control the computers give management over business operations. By providing better and far more current information—new kinds of information—Computers promise to be the greatest "management tool" yet invented. For the first time, management will be able to adjust procurement and distribution to changing conditions by basing decisions on accurate information about demands, inventory and rate of production.

In contrast to the payroll application, which will be using essentially the same input data and will provide essentially the same output as our present semi-mechanical system, the inventory control application is expected to develop new information of great value.

Briefly, the function of the data processor in this application will be to digest the mass of *source* documents effecting inventory status and to issue timely reports based upon daily analyses of conditions.

It is entirely feasible that once a proposed program schedule is known, the computer can automatically determine the material requirements for every item of a required material for any selected period of time. For the current operating requirements, it can prepare NIS and excess reports by item, thus enabling management to anticipate critical situations in sufficient time to provide for effective action.

It can maintain perpetual records of inventory and activity by items as affected by material programs, shipping schedules, purchase orders, receiving reports, withdrawals, returns to stock, etc.

Perhaps the most important result of this application will be that management should be able to analyze the effect of a *proposed* program on the inventory and financial situation. We have not been able to do this effectively before.

For example, suppose the decision is made to increase the size of the fleet by a specific number of ships. Within a matter of hours the data processor can show the effect on every item in inventory. The computer may tell us that at the proposed activation schedule we will be out of Item A in ten days or tell us that we must order Item B within the next 24 hours if we expect to have it where we need it on time.

In the future it is also possible that the electronic data processing machine will (1) write purchase orders telling us what to buy, in what quantities, and from what supplier, and (2) write shipment orders telling our vendors what date certain materials must arrive at the various shipyards or air stations.

With the help of the computer, we expect that our budgets will be more timely and realistic than they have ever been before. We expect to be able to prepare several budgets to pre-analyze the effect of alternative courses of action.

In addition to its data processing function, we expect that the computer will become a very effective communication device. By using common source data, it will eliminate many problems before they exist. By its ability to make integrated analyses and reports which reflect the requirements and results of all management functions it will at once minimize the problem of communication among all functions of the Navy Department.

Our long-range objective is the development of an integrated management control system. Such a system would utilize the information from past demand analyses and future issue predictions to report to management the pulse of material movements in all areas of the world. Tying in the budget, inventory control, financial control, and other applications, the system should give management a far greater ability to adjust its effort to make maximum use of the operational facilities placed at its disposal.

It means that we will be approaching our ultimate goal—to provide effective logistics support to have the right item in the right place, in the right quantity, at the right time, and at the least expense.

Remembering the tremendous speed of the EDPM—the ability to reduce a three or four weeks' job to a matter of hours or minutes, what will be the effects if we can reduce the two-month period to one month—if we can reduce the preliminary phase from six or more weeks to a matter of a few days and at the same time are able to plan more intelligently than we have ever been able to do in the past?

Let us consider some of the implications:

1. Mainly management, (and the comptroller of course is a vital segment of management) will be able to pre-evaluate the effects of a fleet expansion forecast on the efficiency of the supply and fiscal functions—and to do so rapidly, objectively, and precisely. Management will then be in a position to accept a proposed activation or other program schedule as feasible, or to reject it as unsuitable, and at the same time to offer alternative solutions.

2. Proposed program schedules will become more realistic, because material shortages and other bottlenecks can be anticipated and avoided.

3. Because of management's new ability to "turn more nearly on a dime", supply will be in a better position to capitalize on better and more efficient material support opportunities.

4. We feel that the effective coordination between all management functions will be immeasur-

ably increased. Decisions will no longer tend to be independent. There will still be conflicts, but their effects on operations will be subject to an objective, coordinated analysis. Their effects will be premeasured and predicted with the result that final, composite decisions will be based upon a maximum of fact and a minimum of intuition.

We have been asked many times whether or not we will go overboard in preparing more reports than management will be able to consume. To the contrary! We expect that reports will be minimized and condensed to provide only that information requiring attention —thus, in effect, permitting "management control by exception".

We even visualize a master report which will be designed to tell top management that (1) things are going smoothly or (2) we are failing to use our facilities to the maximum advantage and where the weak spots are located.

If management will prescribe pre-requisite relationships and assign tolerances for all operating factors, the computer can be programmed accordingly. Instead of printing masses of data, we will print out and provide management only those tems whose performance was "very good" or "very bad" and deserving of attention.

EDPM Effect on Comptrollers

Many comptrollers, budgeteers and accountants are wondering about the implications of electronic computers and other new "hardware" on future accounting and auditing practices. Many are investigating the subject in some detail; they have a perspective on the subject, but the picture may not be too clear in some aspects.

To begin with, electronic accounting is not going to displace all accountants and auditors, but instead will eliminate drudgery and routine mental labor. It is quite apparent that any large-scale automation of clerical processes will eliminate many of the personnel engaged in this type of work. And while it may not be quite as apparent, it is also likely that in many instances the duties and responsibilities of specific organizational units will be altered.

There is, in addition, the protection which can be obtained from using the electronic equipment itself for purposes of audit and control. The machine never grows tired, has no good or bad days, and presents no problems of training or supervision. A successful program, once designed, will perform accurately, detect errors and differences, and make numerous types of tests and decisions on a completely objective basis.

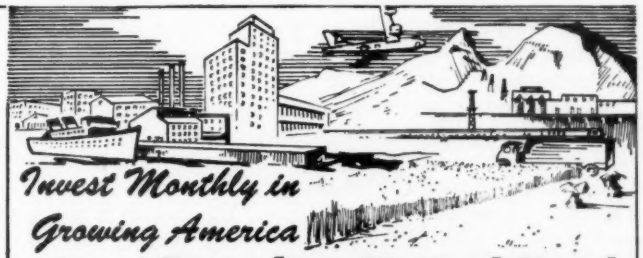
The idea of keeping records in magnetic spots which cannot even be seen, much less read, to the accountant seems fantastic! Accountants will be affected by this new method of integrated data processing and record keeping, in that they must sooner or later become acquainted with the electronic gear.

In general, it is expected that there will be an upgrading of accounting personnel.

Automation and electronic data processing also present a challenge to our whole educational system. We will require a greatly increasing number of technicians and skilled maintenance men. Even today, according to the statisticians, we need 75,000 more technicians each year than we are training. But in order to create the integrated data processing offices in the first place, we shall also need a great number of personnel with a broad understanding of all phases of operation and an equally great number of managers with sufficient skill and imagination to support a program for data processing.

For any real improvement of the situation, we must look to something more than merely specialized preparation for the problem of integrated data processing. Even in the most simple job, data processing will require an increasing ability to think, increased imagination and judgment, and increased understanding of mathematical and logical methods. In brief, increased education—in the largest sense of the word.

With the preparation of the budget on computers, our accountant will no longer be required to guide management utilizing only a rear view mirror. They will be provided with a good, clear windshield and even with some ability to see around curves. The comptroller is approaching the time when he will be able to plan *tomorrow's* action *today*, using a combination of yesterday's information, the EDPM's capacity to project this historical data into future operations, and good sound management ability and judgment, which will *never* be replaced by the machine.



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The Ship With Zip

by Edward J. Burmeister, JO3, USN,

CinCPacFlt Staff

WHAT makes a ship so outstanding that it sets an example for the rest of the Fleet? How can a ship have continual high morale and still carry out its commitments with the kind of efficiency that makes an efficiency expert smile?

In the case of the USS WALKER, DDE-517, a lot of little things have gone into making it one of the outstanding ships in the Pacific Fleet. This Pearl Harbor-based escort destroyer gathered a seabag full of commendations, well-dones, and Navy "E's" on its recent Western Pacific cruise.

One of the most important factors in making WALKER an excellent ship is the skipper's personal interest in keeping all hands well-informed. Almost every day Commander Coleman H. Smith, USN, includes a special bit of news for the crew in the plan of the day . . . a pat on the back for the crew's donations in a charity drive, a congratulatory message to winners of promotions, or an encouraging bit of cheer to those who failed to win advancement. Division officers also hold briefings for the crew before any training exercise.

A good example of the ship's spirit and crewmen's willingness to further themselves was shown in the August advancement examinations. Fifty-nine men, or more than one-fourth of WALKER's enlisted complement won promotions. The WALKER has maintained a 78% average in getting men promoted during the past year. Petty officers play an important part in the CO's scheme of things in the WALKER. Each PO has a feeling of important responsibility on his shoulders and is given a recognition of that responsibility.

WALKER proudly displays 6 Navy "E's", more than any other ship in the Pacific Cruiser-Destroyer Force. They have 4 gunnery "E's", a big green Operations "E" and a big red Engineering "E". Notified of winning the Operations and Engineering "E's" at Yokosuka, Japan, late one evening, the crew immediately broke out their paints and paint brushes and engaged in a "paint race" to get the "E's" on the stacks. The painting was finished the next day at sea while the ship was taking 16-degree rolls.

The WALKER'S skipper says, "We won our "E's" because every man on board, whether he was seaman, fireman, CPO, or officer, worked hard to learn his job and then did his share, no matter how small, as part of a great team. Those "E's" are not the doing of any few men; they were put there by every man on board. I am extremely proud of them and the bit I was able to do to help earn them, and I am sure each man on board will be responsible for putting hash marks under them next year."

Lights have been affixed to the Operations and Engineering "E's" to illuminate them brightly at night. Thus WALKER is identified unmistakeably to the "night owls" and other late liberty returnees. It is the only Pacific Fleet ship to hold both these "E's".

Other extraordinary features of WALKER include the laundry, which operates on a 24-hour-a-day basis while at sea. The ship's post-office provides money order facilities, something many small ships do not have. During the recent WestPac cruise the crew bought a tidy $20,453 in money orders.

WALKER crewmen are given advance dope on possible liberty activities ashore before hitting a new port. The executive officer, Lieutenant Commander Edward W. Behm, USN, prepares a port information booklet from all available information and a mimeographed copy is given to each man on board for every new port visited.

Another factor contributing to high morale aboard WALKER is the ship's 4-man band, proudly broken out on every possible occasion. Upon coming alongside a carrier the band plays "WHEN JOHNNY COMES MARCHING HOME AGAIN". When pulling away they'd play "A'HUNTING WE WILL GO", the WALKER being a hunter-killer destroyer.

Other ships in the division kidded the band at first. On one occasion a sister ship waited until WALKER's band started playing, whereupon "hula dancers" hiding behind Gun Mount No. 1 began "dancing" to the WALKER's music. Now all the ships in the division have small bands.

Some of WALKER's other accomplishments, over and above the 6 "E's", are these: Since April 1st, 1956, only 12 men have been to Captain's Mast, an average of less than 2 monthly. In August no man had to see the skipper. She stood 16th among 149 ships in reenlistments, with a rate of 31%. She received an 'Outstanding' mark of 95.3 in her last Administrative Inspection and a mark of 'Outstanding' in her last medical inspection by the Force medical officer. That WALKER also takes time to play is evidenced by the fact that she placed 2nd in Athletic Excellence in the Pacific Destroyer Force.

The WALKER's skipper gives every credit for the ship's accomplishments to his crew. "A destroyer skipper has many problems", says Cdr. Smith, "but on this ship 'personnel' is definitely NOT one of our tough problems".

To sum up the WALKER's spirit, it can be stated that: the ship recognizes the individual and his desires, be he officer or seaman apprentice; the ship gives constant training of the individual; it tempers the individual by teaching him time-honored customs and traditions of the service; and molds him into a well-organized, smooth-functioning team.

These thing the WALKER has done. The result? A taut, efficient, yet happy ship.

Combat Helmet Radio Developed By Army Signal Corps

A combat helmet radio which enables soldiers to communicate with each other, has been developed by the Army Signal Corps, the Department of the Army announced.

Like its big brother, the walkie-talkie, this new radio is battle rugged and allows two-way conversations. It was developed by the Signal Corps Engineering Laboratories at Fort Monmouth, New Jersey, in order to bring communications to the individual rifleman for the first time.

Professional Services

(*Continued from page 24*)

Electronic Engineer (General)	GS-9	2 vac.
Electronic Engineer (Instrumentation)	GS-9	
Electronic Engineer (Radio)	GS-9	
Electronic Scientist	GS-9	
Electronic Technician (Instrumentation)	GS-9	
Electronic Technician (Microwave Comm.)	GS-9	
Equipment Specialist (Snow and Ice Removal)	GS-9	
General Engineer (Environmental Test)	GS-9	
Mathematician	GS-9	3 vac.
Research Psychologist (Human Engineering)	GS-9	2 vac.

Loring AFB, Maine

Supv Inspection Specialist (Spec Weapons)	GS-11	
Supv Gen Engineer	GS-11	
Electrical Engineer	GS-9	
Supv Gen Engineer	GS-9	

U.S. Naval Air Station, Glenview, Illinois

Position Classifier	GS-11	
General Engineer	GS-9	

Army Electronic Proving Ground, Fort Huachuca, Ariz.

Military Intelligence Analyst	GS-12	Tactics
Analytical Statistician	GS-12	
Physicist	GS-12	General
Psychologist	GS-9 and GS-12	
Supervisory Electronic Engineer	GS-11	Instrumentation
Electronic Engineers	GS-11	Radio and Wire
Meteorologist	GS-11	
Mathematician	GS-11	
Plans & Progress Officer	GS-11	
Electronic Specialists	GS-9	Radio and Television
Military Intelligence Research Analyst	GS-9	
Analytical Statistician	GS-9	Engr.
Management Analyst	GS-9	
Publication Writer	GS-9	
Recreation Supervisor	GS-9	Arts and Crafts
Laundry Superintendent	GS-9	

Scott AFB, Ill.

Civil Engineer	GS-9	
Landscape Architect	GS-9	

USAFSS, Tex.

Elec Eng	GS-11	5 vac.
Elec Eng	GS-9	3 vac.

Selfridge AFB, Mich.

Gen Eng, Maint	GS-12	
Asst Chief Eng Maint	GS-11	
Bacteriologist (Med)	GS-9	
Constr Mgmt Engr (Gen)	GS-9	

Sewart AFB, Tenn.

Gen Engineer (Elec & Mech)	GS-9	

Seymour-Johnson AFB, N. C.

Gen Engineer	GS-11	
Gen Engineer	GS-9	
Accountants (Supvy)	GS-9	2 vac.

Stead AFB, Nev.

Mech Engr	GS-9	

Topeka AFS, Kan.

Industrial Engineer	GS-9	

Turner AFB, Ga.

Civil Engineer	GS-9	
Gen Engineer	GS-9	

U.S. Naval Air Station, North Island, San Diego 35, Cal.

Supervisory Structural Engineer	GS-11	
Supervisory Mechanical Engineer	GS-11	
Electronic Engineer	GS-11	
Materials Engineer	GS-11	
Physicist	GS-11	
Architect (General)	GS-9	

Cheli AFS, Cal.

Aero Engineer	GS-9	
Aero Engineer	GS-11	2 vac.
Aero Engineer	GS-13	
Elec Engineer	GS-9	
Elec Engineer	GS-11	2 vac.
Elec Engineer	GS-13	2 vac.
Elec Engineer	GS-14	
Elec Engineer	GS-15	
Supply Req & Dist Officer	GS-11	9 vac.
Supply Req & Dist Officer	GS-12	3 vac.
Supply Req & Dist Officer	GS-13	3 vac.
Supply Req & Dist Officer	GS-14	2 vac.
Aero Supply Catalogers	GS-7	3 vac.
Aero Supply Catalogers	GS-9	8 vac.
Aero Supply Catalogers	GS-11	3 vac.
Aero Supply Catalogers	GS-12	3 vac.
Aero Supply Catalogers	GS-13	3 vac.
Elec Data Processing Systems Analysts	GS-11	10 vac.
Elec Data Processing Systems Analyst	GS-12	9 vac.
Elec Data Processing Systems Analyst	GS-13	
Elec Data Processing Systems Programmers	GS-9	7 vac.
	GS-11	8 vac.
Elec Data Processing Systems Programmers	GS-13	
Stat Asst/Elec Data Processing	GS-9	
Math/Elec Data Processing	GS-13	
Communications Systems Officers	GS-12	
Communications Systems Officers	GS-13	
Electronic Technicians	GS-9	5 vac.

Vincent AFB, Ariz.

Civil Engineer	GS-9	
Tab Equip Operation Supv	GS-9	

Plattsburgh AFB, N. Y.

Elec Engineer	GS-11	
Gen Engineer (Program & Planning)	GS-11	
A/C Propeller Mech	WB-17	$1.94 ph
A/C Instrument Sys Mech	WB-17	$1.94 ph

Lowry AFB, Colo.

Architectural Engr (Gen)	GS-9	

Luke AFB, Ariz.

Sanitary Engineer	GS-9	
Simulated Flight Trainer Repairer	WB-17	$2.24 ph

Laredo AFB, Tex.

Management Analyst (Manpower Utilization andControl)	GS-9	

Palm Beach AFB, Fla.

Mech Engineer	GS-9	

Perrin AFB, Tex.

Civil Engineer	GS-9	

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Realty Officer	GS-11, GS-12, GS-13, GS-14	
General Engineer (Ind. Reserve Facilities)	GS-12	
Mechanical Engineer (Constr. Equip.)	GS-12	
Personnel Officer	GS-11	
Analytical Statistician	GS-11	
Methods Examiner (Time Standard Studies)	GS-12	
Organization & Methods Examiner	GS-11	
Architectural Engineer (Specifications)	GS-11	
Military Installations Planner	GS-12	
General Engineer (Logistics Planning)	GS-11	
Administrative Officer	GS-9	

Fifth Naval District, Norfolk, Virginia

Civil Engineers	GS-9 and GS-12	
Construction Engineer	GS-11	
Electrical Engineer	GS-11	
Electronics Engineer	GS-11	

Sixth Naval District, Charleston, S.C.

Architect	GS-12	
Realty Officers	GS-9 and GS-11	

Ninth Naval District, Great Lakes, Illinois

Utilities Rate Spec.	GS-9	
Sanitary Engineer	GS-11	
Maintenance Engineer	GS-11	
Civil Engineers	GS-9	2 vac.

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Washington Management

Team to Explain Promotion Plan to AF Officers, Washington (AFPS). Pentagon personnel experts are slated for a world-wide swing of major commands to explain the Air Force's officer promotion program. Briefings will be held at key installations in the U. S. and overseas and are pointing out the immediate and long-range advantages of the present Officer Augmentation Program and steps being taken to improve promotion opportunities.

New Helicopter Squadron. Headquarters United States Marine Corps has announced that a new transport helicopter squadron, utilizing the latest twin engine Sikorsky HR2S helicopter, has been commissioned at the Marine Corps Air Facility, New River, North Carolina. The new squadron, designated HMR (M)-461, is commanded by Lt. Col. G. B. Doyle. This is the first Marine helicopter squadron using the new ship. In carrying out its mission, HMR (M)-461 will support the operations of the Second Marine Division, stationed at Camp Lejeune, North Carolina.

Infantry Divisions Rotate. The 3rd Infantry Division, Fort Benning, Georgia, will exchange stations with the 10th Infantry Division in Germany, beginning in March, 1958, under Operation GYROSCOPE, the Department of the Army has announced. The 10th Infantry Division, which has been in Germany since June, 1955, was originally scheduled to return to Fort Riley, Kansas. Regular Army Gyroscope volunteer personnel of the 10th who undertook personal obligations in anticipation of returning to a home station at Fort Riley, will be given a reassignment option to that post.

Around the World in 45 Hours. The world is still heralding the recent feat of the Strategic Air Command's round-the-world non-stop flight which covered a distance of almost 25,000 miles in 45 hours. With an average speed of approximately 525 miles per hour, the global mission from the 93rd Bomb Wing at Castle Air Force Base landed at March Air Force Base near Los Angeles on January 16th. The B-52's were refueled during flight by aerial tankers along the route.

First Refueling of Nautilus. The USS Nautilus (SSN-571), will be refueled for the first time this spring. The present uranium core of the Nautilus' reactor will be removed and a new core installed. The atomic-powered submarine first got under way on nuclear power January 17, 1955. Since that time she has steamed over 55,000 miles from power generated by her reactor. The old core will be sent to Arco, Idaho, for examination, further tests and reclaimation of unused uranium.

Exceptional Civilian Service Award to Carter Burgess. The Department of the Army recently awarded its highest civilian decoration to Mr. Carter Burgess who retired recently as Assistant Secretary of Defense for Manpower, Personnell and Reserve, to become President of Trans World Airlines.

Dedication of Capital's First Nuclear Reactor. Secretary of the Navy Charles S. Thomas dedicated the first nuclear reactor in the nation's capital last month at the Naval Research laboratory. Atomic Energy Commissioner Willard F. Libby also spoke at the ceremony. Neutrons, provided by the reactor, will be used for a variety of experiments in the physical sciences, including chemistry, metallurgy and electronics, in addition to nuclear physics and reactor technology.

Retirement of Last Propeller-driven USAF Fighter. The last North American F-51 Mustang familiar to all pilots and claimed by some to have been responsible for WWII air supremacy, has been removed from the active Air Force roles and rests on her laurels in the Air Force Central Museum at Wright-Patterson Air Force Base, Ohio. More than 15,000 of the fighters first conceived in January, 1940, were built by North American. One of the highest honors accorded the F-51 was the rating in 1944 by the Senate War Investigating Committee as "the most aerodynamically perfect pursuit plane in existence."

Packaged Water Purification Plant. Capable of satisfying emergency water requirements of 50,000 people, a new Army water purification plant has been designed by sanitary engineers at the Army Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Virginia. Designed for field erection, the plant will be suitable for emergency and tactical use.

Distinguished Service Award. Secretary of the Navy Charles S. Thomas recently presented the Distinguished Service Award to retiring Assistant Secretary Raymond H. Fogler in Pentagon ceremonies. Mr. Folger served as Assistant Secretary of the Navy from June, 1953 until January 12th, on which date his resignation was accepted by the President.

Perkins McGuire Becomes Assistant Secretary of Defense. Succeeding Thomas P. Pike, now a Special Assistant to the Secretary of Defense, Mr. Perkins McGuire recently took the oath of office as Assistant Secretary of Defense (Supply and Logistics). A native of Boston, Massachusetts, Mr. McGuire is a graduate of Worcester Academy and of Lowell Textile Institute. For three years ending in 1942 when he entered active duty with the Navy, he was a divisional merchandise manager of Montgomery Ward. Since October 1, 1955, Mr. McGuire has served as Deputy for Military Assistance Programs in the Office of the Assistant Secretary of Defense (International Security Affairs).

Brazilian Navy Receives Two Submarines. The Republic of

Brazil on January 18th became the first Latin American country to receive ships from the United States Navy under the terms of the Bilateral Military Agreements. The transfer of the two ships, the MUSKALLUNGE (SS 262) and PADDLE (SS 263) was made at the Naval Submarine Base, New London, Connecticut. At colorful ceremonies attended by many dignitaries of both nations, the two submarines were commissioned in the Brazilian Navy and will bear the names RIACHUELO and HUMAITA.

Global Flight Information Service. The Army's Aviation Flight Information Division has established a global flight information service to insure its aviators high quality flight data in critical world areas. To meet the mushrooming needs of Army aviators, field detachments are planned for Heidelberg, Germany; Tokyo, Japan; Fort Amador, Canal Zone, and Fort Richardson, Alaska. The Jeppesen Airway Manual, official document of Army Flight Information, includes navigation aids, radio facilities, airway routing, radio proceedures, radar information, danger area data, instrument let-down and approach proceedures. It is distributed directly to more than 3,500 Army, National Guard and Army Reserve aviators and supplemented by weekly revisions. In the past Army aviators used flight information furnished by other government agencies. While reliable this information did not contain vital data concerning Army, National Guard and some civilian airfields suitable for the Army's air operations.

New Manpower Chief. Mr. Mansfield Sprague, former Department of Defense General Counsel has assumed the tough assignment as Assistant Secretary of Defense (Manpower, Personnel and Reserve) vacated by Carter Burgess. Mr. Sprague brings to this important post a wealth of experiences both civilian and military.

Air Force Talent Contest. Base level talent contests are being held this month in preparation for the Air Force-wide show scheduled for Armed Forces Day, 18 May. Ten entertainment categories are included in this year's competition. The 1957 Tops in Blue show troupe will be formed in July and off on an Air Force-wide tour.

Navy Tactics to South American Navies. Under the command of Captain C. M. Foster, USN, six escort destroyers, one destroyer escort, and two submarines are presently on a three-month goodwill training cruise to South America. The force will divide into two groups, one for the Atlantic side, the other Pacific, and will demonstrate U. S. Navy anti-submarine tactics to their host navies. Upon completion, they will join with ships from each host country in combined exercise.

New Mortar Locator (ANS). The Army has developed a new radar mortar locator with an electronic brain that can locate an enemy position in seconds. Perfected by the Army Signal Corps Engineering Laboratories at Fort Monmouth, New Jersey, it is believed to have a longer range than any known mortar built today. Using a new beam technique it is technically known as the AN/MP-4. The new spotter is compact and mobile with everything but its power supply mounted on a single, easily-towed, two-wheel trailer.

Executive Director for Subsistence. Major General Henry R. McKenzie has been appointed by the Department of Defense as the new Director for Subsistence. In his new post, General McKenzie will direct operations of the Military Subsistence Supply Agency, established under a Department of Defense Single Manager Assignment to provide the Armed Services with food supplies. The agency is responsible for wholesale subsistence supply to all military services, including cataloging, standardization, requirements determination, procurement, production, inspection, wholesale distribution and maintenance.

The average stay at a particular station for an Army officer is 14 to 15 months; for a warrant officer, 18 months; for sergeants and corporals of at least seven years' service, 11 to 14 months; for the lower grades, nine to 10 months.

Pair of Atomic Subs

The world's first two nuclear means of transportation, the submarines Seawolf (foreground) and Nautilus, steam into Long Island Sound from Groton, Conn. as the Seawolf finishes her maiden voyage.

A-Sub Seawolf Runs First Atlantic Trial

Washington (AFPS)—The atomic submarine Seawolf ran its first trial recently in the Atlantic.

The $63 million sub is the second nuclear-propelled underwater boat to slip from the ways in the Navy's program for a 15 A-sub fleet. It was built at Groton, Conn.

Bigger and faster than the first A-sub, Nautilus, which soon will be drydocked to replenish her uranium-charged reactor, the 3,260-ton Seawolf uses liquid sodium as a reactor coolant instead of pressurized water.

The highly corrosive sodium caused some early mechanical difficulties. However, Navy officials say the sodium eventually could be more effective than the water-cooled system used in the Nautilus, which has cruised more than 50,000 miles.

New York Chapter. The January meeting was held on the 16th at the New York Times Building Annex where an enjoyable dinner meeting was attended by a record number in attendance. Mr. Sherman E. Clark, Training Director for the Radio Corporation of America was the guest speaker. His subject entitled "Supervisory Training" was both stimulating and interesting to both members and guests. Mr. Clark was introduced by Chapter President Major Ben Fowler.

Fort Benning Chapter. Dr. Ralph B. Draughton, President of Alabama Polytechnic Institute at Auburn, was the guest speaker at the January 15th meeting of the Fort Benning Chapter of the Armed Forces Management Association. The dinner meeting was held in the Main Officers' Mess. Dr. Draughton's subject was "Managing a Large Educational Institution." Colonel Albert N. Ward, Jr., Chief of the Advance Tactics Group of the Army Infantry School's Tactical Department, presented an interesting talk on "Field Command in the Atomic Age." Dr. Harold S. Tate of Clemson, South Carolina and the Infantry School Educational Advisor is president of the Fort Benning Chapter.

San Antonio Chapter. Major General Conover Hains III, Chief of Staff, Fourth Army Headquarters, Fort Sam Houston, Texas, was the guest speaker at last month's Armed Forces Management Association meeting. General Hains spoke on "What Management Means to Me". His discussion was so enthusiastically received that Miss Mary E. Williams, Secretary, has secured the General's permission, and we are reproducing it on these pages of ARMED FORCES MANAGEMENT for your review.

What Management Means to Me

Talk to San Antonio Chapter, Armed Forces Management Assn.

By Maj. Gen. Peter C. Hains, 3rd, CofS, Hq. Fourth Army

Mr. McGuire, distinguished guests, ladies and gentlemen:

When Mr. McGuire asked me to address this Association, I told him a story which was intended to qualify me as an expert witness, and that story may at the same time disqualify me.

In October after VJ Day, I reported to General Russell Maxwell, G-4, War Department General Staff, in the Pentagon. He told me he wanted young men under 42, with broad experience in the logistics field, and that G-4 was a small shop and had little room for on-the-job training.

As I was 44 years old and had had all my experience in the tactical field, I could not see how I could fill the bill. Nevertheless, he signed me up, and after two months of getting acquainted with my new job, he called me in to his office. That was just about eleven years ago today!

General Maxwell said, "Hains, I'm giving you a new job. You will have one assistant and one clerk. When you can justify more I will consider it."

Then he explained to me that after every war or national emergency the Congress reduced drastically the manpower and money made available to the Armed Services. On the other hand, the military planners and operational people continued to program in terms comparable to those used during the war. Logistics support of course fell far short of supporting these War Department programs.

My job was to analyze the programs of the organization, training and operations staff and compare their requirements with the manpower and money we might expect Congress to make available, and then to propose the necessary action to bring the programs into consonance with resources.

I might add that General Al Wedemeyer and General Loris Norstad were the planners whose programs I was to analyze!

Three years later, the one assistant and one clerk had grown into a division of three branches—Plans, Programs, and Program Analysis. See how a small job can grow into a nice empire?

In those days there were no comptrollers. The Budget Officer of the War Department handled all the money and he didn't let everyone know too much about what he was doing.

Also in each General Staff and Special Staff Section there was a management office. They made surveys, spoke a secret language and usually made drastic cuts in your operating forces that you knew were wholly unreasonable.

Now you can see that we were headed for trouble. I was bootlegging information about budgets to include in my analysis operation, and the management people were always messing up my operation by imposing unrealistic and unreasonable improvements and re-

organizations on me. The Budget Officer was becoming irritated at the invasion of his prerogatives by this analysis operation and an increasing number of characters were beginning to see some good and a big future in this management business.

I guess we made so much clamor in the Pentagon that the Powers-That-Be decided the best way to handle us was to put us all in one section. Anyway, reorganizations were quite popular in those days and, besides, we had to unify the three services, so there was created a new staff agency known as the Comptroller and we were all consolidated into it. That was my cue. I went to the Caribbean Command and left the management, budget and analysis people to welter in their own blood.

So you see, gentlemen, in qualifying as an expert witness, I have managed to disqualify myself, at least to some degree. I did escape becoming a comptroller!

I have been asked to discuss "what management means to me." Departing from the facetious vein of my introduction, which incidentally, though facetiously presented is a statement of facts, I will try first to define my understanding of management and will end with a few words of caution.

The word "management" may lead many to think of a single segment of organization such as the Comptroller. Management means more to me than any one segment of our organization or any one effort of our staff.

To orient your thinking to Army terms for "management," let us start with the dictionary definitions and apply each to Army operations. By this method I can reach an understanding with you that will tell you what management means to me without getting lost in semantics.

"*MANAGEMENT*"—One definition is: "The collective body of those who manage or direct any enterprise or interest." In the Army we use the term "Organization." We organize a segment of the Army, either tactical or nontactical, to identify who "management" is within that segment. Organization is only one element of management in the Army. However, it is one of the first steps taken toward good management.

Can you feature your headquarters operating without being organized? How could you place responsibility for managing an operation if the lines of authority were not understood by all concerned?

I am sure that the answer is obvious to each of you. Organization is essential in management. Just to make this obvious statement does not tell you how I feel about the role of organization as an element of management.

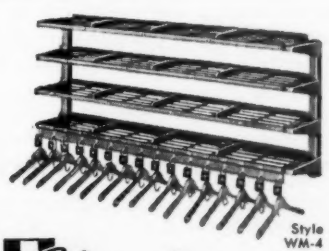
Organization means group association, division of work, delegation of authority, recognition of leaders, creation of specialists and coordination of effort. All of these or any one of them bears out our first dictionary term of "management." They all apply to each activity of the Armed Forces and to your endeavor in this association.

How would this lead anyone to think of the Comptroller? It may be that, since the Comptroller has a staff responsibility for analyzing organizational structures and allocations of functional responsibilities, he is understood to be directing an enterprise or interest. This can be clarified by the use of the term "organization." The Comptroller is located in our Army headquarters organization on the general staff level. In this capacity, the Comptroller provides a *service* to the Commander and his staff. He does not direct the efforts of anyone outside his own office. His management engineering staff analyzes the organizational segments of the headquarters *with the assistance of a representative of the staff section involved.* As a result, recommendations are developed on organizational improvements. It is still up to management *of the section involved* to take action on the recommendations. I will make this same distinction between management of an activity, and the service to that activity provided by the Comptroller, in other terms of "management." I think it is important to clearly understand the difference between the elements of management and the management *services* provided by the Comptroller. That brings us to our next definition of management.

"*Management*"—Another dictionary definition. "The judicious use of means to accomplish an end." In addition to organizing, this element of management in our Armed Forces is the one that makes or breaks a manager. I think that our Army Programming and Budgeting are elements of management that fit this definition. In considering what this element of management means to me, the use of the word "judicious" in the definition is the key to understanding the full term.

Just using means to accomplish an end does not imply that management was involved. On the other hand, judgment, or the mental faculty of deciding correctly by the comparison of facts and ideas, is definitely a part of management. This is borne out in the Army's management system of programming and budgeting. You may have noted that I used the term management system to include both programming and budgeting. That was intentional since the Army is in the process of integrating programming, budgeting and accounting into one system

(*Continued on page* 50)



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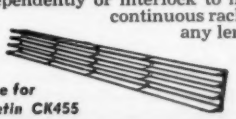

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Management Briefs from the Services

USMC's Largest Base. The Marine Corps Training Center, Twenty-nine Palms, California, which was detached from operational control of MCB Camp Pendleton on 1 February, becomes the Corp's largest base. Commanded by Brigadier General T. G. McFarland, USMC, it in addition houses the command flag of Force Troops, Pacific. Brigadier General Randall M. Victory, USMC, is slated to succeed to the dual command on 1 July when General McFarland ends his military career.

Dayton Air Force Depot Officer Retires. Colonel Leon W. Armour, USAF, Special Assistant and formerly Deputy Commander to Brigadier General Leslie G. Mulzer, Depot Commander, retired from the service last month. At a testimonial dinner attended by 130 military and civilian personnel, General Mulzer presented the retiring colonel with the Commendation Ribbon for Meritorious Service and lauded his outstanding leadership and managerial ability.

Fort Carson Joins in Military Awards. Military personnel are now eligible to receive cash for their suggestions aimed toward improvement and conservation. A monthly contest with first, second and third prizes of $25, $15 and $10. A joint award submitted by several men is eligible to win an award not to exceed $100.

Offutt Air Force Base Awards $304 to Employee. Paul Kertson was recently presented with an award of $304 for his method of manufacturing a wider leading air duct apron for T-33s. Offutt AFB alone has realized a savings of more than $15,000 from Kertson's idea based only on their eight T-33s of the type. The suggestion has been forwarded for possible use Air Force-wide and a possible additional award.

NAS Alameda Pockets $34,964 From Ideas. Awards totaling $1840 were presented last month to 55 Naval Air Station employees for Beneficial Suggestions which will save almost $35,000 each year.

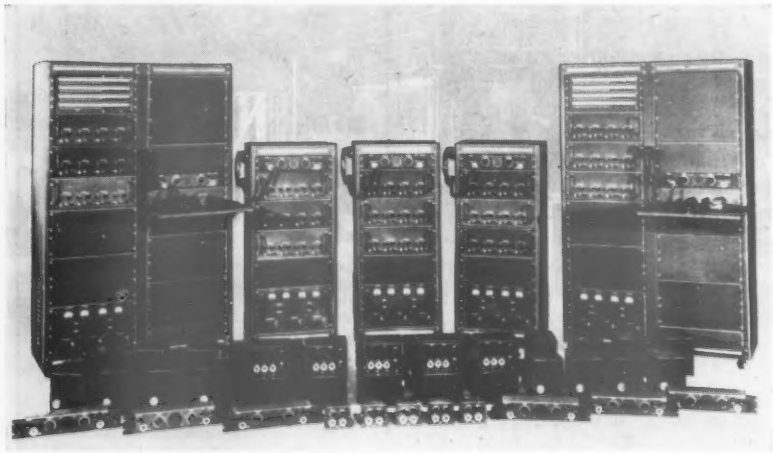
21 BuSandA Officers Complete Seminar. Twenty-one officers last month completed the last in a current series of seminars in supply management. A total of 420 officers from ships and stations have completed the popular two-week courses designed to better equip personnel in dealing with supply problems of the new, atomic-age Navy.

Alaska Records Management Clinic. In a further move to cut the cost and volume of government paperwork, four members of the Alaska District Corps of Engineers attended a Records Management Clinic last month held in Anchorage. The clinic was one of the 29 conferences held in key cities in the United States and two in Alaska, in line with a recommendation by the Hoover Commission.

Two Busanda Men Share Record Award. The Navy honored two of its employees recently by presenting them with the final increment—$5,625—of a $10,625 award, the highest cash award ever made by the Department of Defense for an employee's superior accomplishment. The employees, Hobart M. Griggs and Dennis Mitchell, worked out a reduction in freight rates on projectiles and ammunition component parts with savings to the government exceeding $10 million a year. Three-quarters of the sum went to Griggs, senior civilian in BuSandA's Freight Rate and Classification division, who was the principal suggester, and one-quarter to Mitchell, formerly a transportation specialist in the same office and now retired.

New Heliport at Tripler Hospital. Brigadier General John F. Bohlender, commanding officer of Tripler Army Hospital in Honolulu, recently made the first inaugural landing in an Army helicopter piloted by 1st Lt. Billy R. Taylor on the new concrete pad built by Tripler engineers. Used to bring emergency cases directly

New Guided Missile Intercom



Grouped above are the units that make up the new intercommunication system produced by Connecticut Telephone & Electric Corporation, Meriden, Connecticut, for the U.S. Air Force guided missile program. The large racks at center are operator stations containing telephone amplifiers. From these stations radiate a network of hundreds of the smaller receiving units. The stations are interconnected through a specially integrated system that enables any operator to reach any station instantly, to exchange information essential for the proper launching of the missile. With the completion of this 'pilot' intercommunication system, the Meriden firm will start production on additional systems ordered by the Air Force.

to the hospital from various parts of the Territory, the field is being electronically equipped for night landings to provide round-the-clock service. Lighting will be accomplished by a designated person in the hospital dialing a confidential telephone number and the lights will come on automatically.

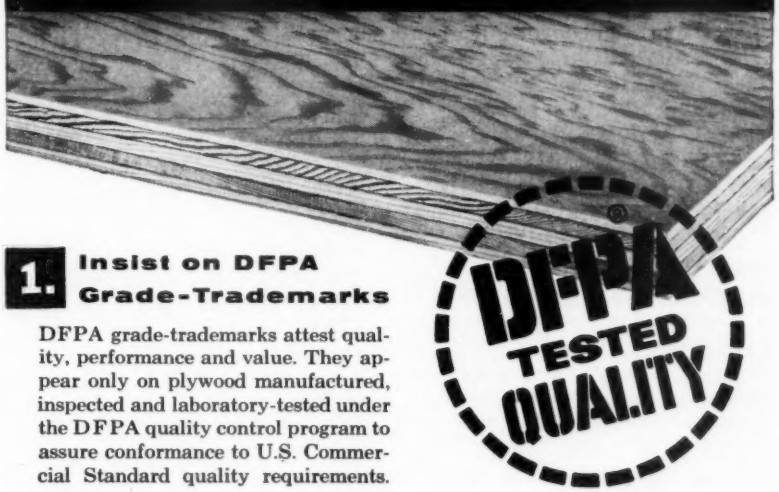
SAC Cash Awards for Ideas. Twenty-three Strategic Air Command enlisted men received $300 recently from the Incentive Awards Committee for dollar-saving ideas. Top winner during the month was M/Sgt. Wayne E. Miller for an improved suggestion on BX ration cards utilized in England, who collected $100 in cash.

School for Future Submarine Officers. The new "PCO SCHOOL" conducted by Commander Frank Andrews, Force Tactical Development Officer at Pearl Harbor, is in the business of training prospective submarine skippers. A five weeks' course, covers subjects such as underwater approach and attack tactics, new torpedo firing methods, and other such related subjects. Eight submarine officers are presently in attendance with hopes of winning their own ship.

Pressure Measuring Instruments. The U. S. Navy Mine Defense Laboratory at Panama City, Florida, is now using pressure measuring instruments utilizing electronic circuits for measuring pressure variations on the ocean bottom. The unit is composed of a detector-amplifier, a recording milliammeter, and a pressure pick-up which may be used with a four-conductor cable up to two miles in length.

$300 for Saving $6000. Frank W. Edwards, Norfolk Naval Shipyard, Portsmouth, Virginia, headed a list of 61 winning awards last month in the Beneficial Suggestions Awards program. Edwards worked out a modification to boiler casing to facilitate exterior inspection of side wall water stud tubes of boilers which is estimated to save the government $5,980 each year. In all, the Yard paid out $1,665 to the "thinkers" for a return to the government of $27,041 plus intangibles.

FIR PLYWOOD PURCHASING GUIDE



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DFPA grade-trademarks attest quality, performance and value. They appear only on plywood manufactured, inspected and laboratory-tested under the DFPA quality control program to assure conformance to U.S. Commercial Standard quality requirements.

2. Choose the right grade for each job

DFPA quality-tested fir plywood comes in two types: 1. *Exterior* (waterproof glue for permanent outdoor exposure); 2. *Interior* (moisture-resistant glue) for use indoors, temporary outdoor uses and sheathing. Within each type are *appearance grades* to meet the exact needs of any given job. Most popular grades are shown below: (other grades including panels made of other western softwoods, also available)

TYPICAL USE	EXTERIOR-TYPE (Waterproof glue)	INTERIOR-TYPE (Moisture-resistant glue)
Where appearance of both sides important. Cabinet doors, single thickness walls, etc.	EXT-DFPA-A-A	INTERIOR-A-A-DFPA
Where only one side will be seen. Siding, paneling, signs, fixtures.	PlyShield® (A-C)	PlyPanel® (A-D)
Special concrete form grades. Both faces sound, solid, smooth.	Ext. PlyForm® (B-B) Maximum Re-use	Int. PlyForm® (B-B) Multiple Re-use
Unsanded structural and maintenance panel. Sheathing, crating, temporary screening.	Exterior Glue PlyScord® (C-D)	PlyScord® (C-D)

SIZES: Standard fir plywood thicknesses are from ¼" through ¾"; standard size is 4′ wide, 8′ long. Other thicknesses and sizes are also available, including "king-size" scarfed panels up to 30′ and 50′ long.

TEXTURED FIR PLYWOOD – Fir plywood comes in several smart textured panels for special decorative applications such as siding, paneling, displays and fixtures. These include *Texture One-Eleven* Exterior plywood (deep parallel grove pattern, shiplapped edges) and panels with attractive *brushed, striated,* or *embossed* surfaces.

OVERLAID FIR PLYWOOD – is Exterior fir plywood with resin-fiber overlay permanently fused to one or both sides of panel. *High density* is hard, glossy, abrasion-resistant (use for long-lasting signs, shelving, concrete forms); *Medium density* overlaid plywood is smooth, with texture similar to drawing paper (ideal paint base for signs, fixtures, siding).

FREE WALL HANGERS – Handsome 18"x33" wall hanger. Handy fir plywood grade-use-specification guide. Order one for everyone in your firm who specifics fir plywood. Also available, specification portfolio. Includes detailed description all grades, sizes, specialty panels. Commercial Standards requirements. Offer good USA only. Douglas Fir Plywood Assoc., Tacoma 2, Wash., Dept. 187.

For more facts request No. 27 on reply card

New Marine Division Chief. Major General J. C. Burger, USMC, will assume command of the 2nd Marine Division relieving Major General R. H. Ridgely, Jr., who has been given the post of Inspector General of the Marine Corps on 1 July 1957. General Burger has been commanding general of Marine Corps Base, Camp Lejeune, North Carolina.

Navy Management Course. A new 38-week course in engineering performance standards is in progress jointly at Jacksonville and NAS Quonset Point, R. I. The course is the forerunner of a Nationwide series of such courses to be held at major stations. The engineering performance standards program will be permanently installed in the three major Navy activities of overhaul and repair, supply, and public works. After successful operation it is planned to extend it to cover the other areas supported by maintenance and operation funds.

80 New Jet Jockys at Webb AFB. Class 57G graduated 80 new jet fighters recently in colorful ceremonies at Webb Air Force Base, Texas. Mr. H. A. Hensley, a cadet at Brooks and Kelly Fields in 1925-26, addressed the graduating class and a large group gathered to the affair. Lt. Col. Dean A. Fling, USAF, Commander 3560th Pilot Training Group, announced that 2d Lt. Earl R. Murphy, USAF, distinguished himself with the highest academic standing.

New CIC Caribbean. Lt. General Robert M. Montague, USA, recently assumed the top post in the joint command of the United States Forces Caribbean at Quarry Heights, C. Z. General Montague recently returned from Korea where he has been commanding general of the I Corps.

Army Pilots IFR School. The second class of the Third Army Instrument Flight School recently graduated more instrument qualified pilots to fly the Army's aircraft in any weather, 24 hours per day. Central American Airways, Inc., of Louisville, Kentucky, is conducting the school under Army contract at Outlaw Field, Clarksville, Tennessee. The program includes 80 hours of air work, 40 hours in link trainers and 90 more of ground school. Students are all qualified Army pilots prior to enrollment.

$85,362 Saved by Fort Eustis in 1956. The Transportation Training Command has recently announced that more than $85,000 in savings have resulted from incentive award participation by TTC personnel at Fort Eustis and Fort Story, Virginia. 787 suggestions were submitted of which 160 were adopted. All other Transportation Corps installations in the United States fell behind this great effort by the Virginia command.

Male Monopoly Broken As Woman Wins $300. Mrs. Gladys King of the San Francisco Naval Shipyard cracked the jinx recently by pocketing the maximum Benny Sugg check for $300. Gladys' idea to use business machine cards for direct stock requisitioning of material will save the shipyard over $4000 annually. Captain C. E. Trescott, USN, Shipyard Commander, presented the check to the attractive Mrs. King noting two firsts (1) A rare occasion to present this maximum award, and (2) the first to one of the fair sex, proving that "all the thinking power is not concentrated on one place."

RCAF Chief Visits ARDC. Air Vice Marshal R. C. Ripley of the Royal Canadian Air Force was a recent visitor to the Air Research and Development Command. The Air Marshal who commands the Canadian Air Materiel Command, was interested in common problems in aviation research and development. Major General John W. Sessums, Jr., USAF, and Vice Commander of ARDC, acted as the official host during his visit.

Fort Gordon Man Saves $102,-520.58. Private Allan M. Smid from the Signal Corps Training Center reports the overburdened American taxpayer is getting a $100,000 windfall, thanks to the clever planning by Mr. Thomas O. Sessions, supervisor of the operations and equipment section of The Southeastern Signal School. $730 was recently awarded Sessions for his part in originating a three-phase project in the school. Following his suggestions, improvements made so far by training personnel of the High Speed Radio and Radio-Teletypewriter Operation Courses have resulted in the savings. Presentation of the award was made by Colonel Otto T. Saar, Commandant.

General McGaw to West Coast AA Command. Major General Edward J. McGaw, USA, has recently taken command of the 6th Anti-aircraft Regional Command at Fort Baker, California. General McGaw, recently commanding general of the First Cavalry Division in Japan, is serving his second tour as commander of the Western defenses.

Procurement Conference. Dr. Jacob Seidenberg and John A. Howard, members of the President's Committee on Government Contracts, were among a group of outstanding speakers at the Fourth Army Procurement Conference held last month at Fort Sam Houston, Texas. Approximately 75 persons including 35 purchasing and contracting officers from Army installations in the Fourth Army Area were in attendance.

Beating the Record to Save Dollars. Industrial Manager, USN,

(*Continued on page 49*)

RCA Develops "Noise Barrier"

New RCA-developed "noise barrier" ear protector—smallest, lightest, most flexible of its type—which will enable ground crews and maintenance personnel at military and commercial airfields to work around jet engine aircraft without danger of hearing loss or ear damage.

Book Reviews

by D. D. Corrigan

How To

"SCIENTIFIC INVENTORY CONTROL," by W. Evert Welch (Management Publishing Corporation, 158 pages, $12.50).

Valuable guides are given by Mr. Welch on . . . how to evaluate the quality of lead-time data . . . how to compute order quantities when usage is variable . . . how to handle the quantity discount problem . . . how to make a scientific inventory study.

Businessmen today are having to rely on "higher mathematics" to solve business problems. While much has been written on this subject, most of it is understandable only to a mathematician. "Scientific Inventory Control" was written for the average businessman in language that he can understand, written for the man who must do the job himself. This is not a textbook or a theoretical study, but goes directly to the heart of the inventory problem, and discusses how much to make or buy, and when to make or buy it.

Eighty-six tables and figures show the reader proven formulas that are now being used to control inventory in dozens of well-managed firms. For the non-mathematical reader, a table of square roots has been included in the text. By using this table, one can solve any of the formulas using no more than simple arithmetic.

Tables, illustrations, and trigonometric formulas add to the value of this informative and interesting book on engineering measurement.

On Your Feet

"EFFECTIVE SPEAKING IN BUSINESS," by Huston, Sandberg and Mills (Prentice-Hall, 329 pages, $6.35).

On the first page of this book an astounding statement is made. "It has been estimated that the average person uses between 20,000 and 30,000 words a day." If this is true, as I have no reason to doubt, the small amount of time necessary to spend in reading this book should be of great value. Each of the three authors is a speech authority who has investigated what kind of speech situations would be most often confronted by business and professional people. Many companies contributed time and advice through their personnel and training departments to supply the authors with study material and facts and figures.

The emphasis is not on public speaking, but business communication. If we judge strangers as well as friends and associates by what they say to us, then it follows that success in business often depends on a person's ability to express himself, his ideas, a product, or to sum it all up, to be able to sell himself. Most business transactions are influenced by speech, and a good speaker is one who expresses his ideas in a well chosen way at all times, whether in conversation, at the conference table, or in front of an audience. If it is then accepted that talking well is a pre-requisite to business success, let us see what these three authors have to say that is constructive.

Certain qualifications are necessary for a good speaker and a self analysis is the proper beginning.

"A. Is your appearance satisfactorily impressive?
B. Are your powers of observation well developed?
C. Do you possess the initiative to tackle a job without being prodded?
D. Are you thorough in your work?
E. Do you make decisions easily and have enough faith to stick by them?
F. Are you able to adapt yourself to new situations?

(*Continued on page* 48)

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by William Harkins.....$10.00

....EFFECTIVE SUPERVISION by Milon Brown.....$ 4.50

....ENGINEERING MECHANICS by Archie Higdon.....$ 7.95

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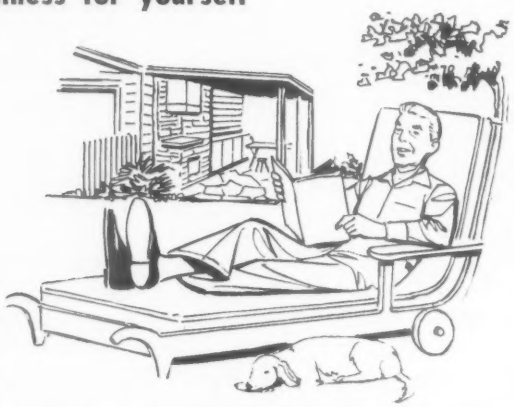

In February, 1956, ARMED FORCES MANAGEMENT carried an article entitled, "Personal Management", part of the "What Management Means to Me" series. It contained an excellent explanation of the retirement problem of the Serviceman, and how to help solve it. Since then, so many requests for reprints have poured in that we are making copies available to our readers at no cost. If you would like a copy of this thought-provoking article, simply circle No. 1 on the enclosed card, or drop a card to "Librarian, ARMED FORCES MANAGEMENT, 208 South Second Street, Rockford, Illinois".

For more facts request No. 1 on reply card

NEW 10-KEY ADDING MACHINE

Monroe Calculating Machine Company. A newly designed series of 10-key adding machines in the 600 line has been announced by Monroe. Modernized styling and new color harmony make the 600 an eye-pleasing standout in any office. Engineered for speed and accuracy, the machine features Monroe's open keyboard for faster entry of figures. "Velvet Touch" action for easier operation, and interlocks to prevent errors. Built with extra capacity, the 600 lists 11 and totals 12, which makes it useful and practical for ordinary multiplication. The machine is available in both electric and hand models and in an electric-hand model. The above claims by this time-honored manufacturer should make the new machine a necessity in your organization.

For more facts request No. 2 on reply card

MILITARY SPECIFICATIONS FOR ALLOY 6066

Harvey Aluminum Company. Complete military specifications for alloy 6066, developed by Harvey Aluminum, are now available for general distribution. The specification MIL-A-25493 (USAF) covers alluminum alloy bars, rods, and shapes produced by extruding. Recommended for applications requiring high strength combined with excellent corrosion resistance, the alloy with a strength equivalent to 2024, has welding characteristics similar to 6061.

For more facts request No. 3 on reply card

POCKET-SIZE TV CAMERA

Radio Corporation of America. A pocket-size live television camera has been developed by RCA for military airborne, mobile, and field closed-circuit TV applications. Mr. Theodore A. Smith, Executive Vice President, RCA Defense Electronic Products, said that the ultra-miniature TV camera was made possible by a new design approach which combines transistors, specially developed transistor circuitry, and a new RCA half-inch vidicon camera tube. Weighing less than a pound and measuring only 1⅞ by 2¾ by 4½ inches, it surpasses standard vidicon-type industrial cameras in sensitivity. Used with an F-1.9 lens, it requires only 10 foot candles of scene illumination for clear, contrasty pictures. More detailed information and specifications are available without obligation.

For more facts request No. 4 on reply card

NEW ALLPURPOSE ELECTRIC TRUCK

Lewis-Shepard Products Company (See cut). An electrically-powered fork truck with special optional features for operation in sub-freezing areas has been developed for military and civilian use. An impressive list of features furnished by the manufacturer include a brake enclosure, chrome-plated brake cams, special hy-

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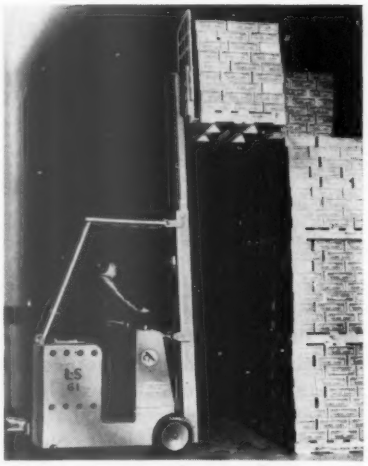
As a service to OPERATING DEPARTMENTS and PURCHASING OFFICERS, ARMED FORCES MANAGEMENT will provide you with a selected list of manufacturers' products. Claims presented are those of the supplier and not necessarily of this publication

How to Use Armed Forces Management's Library—

Inserted in this issue, a postage free card is provided for your convenience in requesting descriptive and informative literature. This will be forwarded to you, without obligation. Many cost saving ideas are generated by Operating Departments that have referenced information on products available. Purchasing Officials will find this type of information invaluable. All that need be done is: fill in name and address, circle that which will assist you, and drop in the mail.



draulic oil and lubricants in drive-axle housing and steering box, sealed bearings with water-resistant lubricants, and protective undercoating. The new Model "E" truck has other options such as heated control panel, bumper strips, stainless steel steering chain, extra-thick forks, spotlights and canvas padding for the battery compartment. Complete photographs and specifications are available on all models without cost.

For more facts request No. 5 on reply card

INSTRUMENT CATALOG

The David White Instrument Company. Manufacturers of surveying instruments, this corporation has just recently completed a new four-color catalog containing information about the company's entire line of precision instruments. In addition to pictorial and descriptive information, many new instruments are included for your information. May we send you a personal copy without obligation?

For more facts request No. 6 on reply card

NEW TRACTOR-MOUNTED FRONT END LOADER

Superior Equipment Division (Superior Pipe Specialties Company). A new line of tractor-mounted front-end loaders has recently been announced, claimed by the manufacturer to have three firsts in the field. (1) The loaders feature a new extra-strong tubular frame, part of which acts as an hydraulic oil reservoir. (2) Bucket rams are mounted so that they cannot "spring" and hydraulic piping is inclosed in the loader arms for protection. (3) The loaders have an especially strong "pry-out" action for heavy or frozen loads. They can be mounted on most models of low silhouette four-wheel industrial tractors. Here, for those economy and maximum utilization minded installations, is a way of accomplishing your assigned mission with a minimum of equipment and expenditures. A much more detailed brochure complete with specifications, pricing and distribution points is available without obligation.

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NEW LIGHTWEIGHT EARPHONES FOR PILOTS

Telex, Incorporated. Are you wearing the old-style heavy cumbersome head set? Are you bothered by headachy ear pressure? Does background noise besome a factor in copying an ATC clearance or on an instrument approach? If the answer to any of these is "yes," the Telex Corporation, makers of precision hearing instruments, offer you an inexpensive CAA approved headset, weighing only 1.6 ounces that pipes signal directly into the ear. Available for many uses, the new Telex Twinset has invaded the airlines, corporate pilots, and desires to pass their new equipment into military channels. A complete release with photographs, prices and specifications is available to you at no cost by requesting the information on the attached product card.

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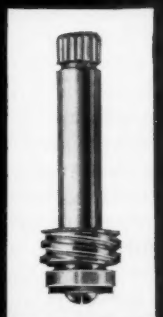
NEW PLUG-IN ½-INCH PRECISION POTS

Waters Manufacturing Company (See cut). Simplifying installation in miniaturized assemblies that use printed-circuit techniques, the new Model APP-½ Waters precision potentiometer is provided with a 3-prong base that fits standard 3-circuit microphone sockets. The plug-in connection afforded by this unit is also advantageous in automated assemblies where precise positioning and rapid installation are essential. The Model APP-½, plug-in precision potentiometer is available in resistance ranges of 10



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10 YEAR TROUBLE-FREE OPERATION

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ohms to 100,000 ohms, with standard accuracy of 5% below 50K and 2% above 50K. Detailed information is available without obligation.

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ALUMINUM NAME AND MARKING PLATES

C & H Supply Company. A bright, red and black brochure, "Branded for Life," is available by the C & H Supply Company, manufacturer of Metal-Cals, the anodized, etched aluminum nameplate. The descriptive booklet explains in detail how Metal-Cals can be used for quick, economical trademarking, serial numbering, service labeling, catalog and parts numbering and dial and gauge marking. In addition to telling what Metal-Cals are and how they may be ordered, and demonstrating practical applications of the plates, the new booklet contains a montage layout of typical Metal-Cals, representative industries and military markings. Backed by a pressure-sensitive adhesive and the capabilities of adhering to any smooth surface, they are available in a wide variety of colors and aluminum. A free copy will be forwarded upon receipt of your inquiry.

For more facts request No. 10 on reply card

BOOKLET-PROFILES IN PROGRESS

Hamilton Standard (Division of United Aircraft Corporation). "Profiles in Progress," an illustrated booklet on the vital part played by highly-specialized aircraft equipment in the jet age, has been issued by Hamilton Standard. The booklet discusses, in layman's language, aircraft air conditioning systems, turbine engine starters, and fuel controls, hydraulic pumps, pneumatic valves, and electronic temperature controls. The booklet which we will forward you contains the most complete list yet published of the jet aircraft using Hamilton Standard equipment, together with the list of the equipment used on each aircraft.

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FUSE HANDLING AND TESTING FACILITIES

The W. L. Maxson Corporation. Copies are available without obligation of an interesting booklet describing fuse handling and the testing facilities at the Old Forge, Pennsylvania plant of W. L. Maxon Corporation. The maximum information within security regulations is given for your information.

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"SPEEDCAT" TRACTOR-BULLDOZER

Mead Specialties Company. The new Model R-9 "Speedcat" Tractor and Bulldozer, said to be the results of more than three years of development work, introduces a number of innovations into the midget tractor field. The largest single improvement permits speeds equal to most wheel tractors, but with the greater pulling power and maneuverability of a crawler tractor. Because of its small compact size, the "Speedcat" can work in small areas like ammunition revetments, boxcars and gun emplacements. Without attachments, it is only 36″ wide and 62″ long and weighs only 1150 pounds, yet its 1300 pound draw bar pull will handle jobs hitherto assigned to larger and more expensive machines. Transportation from job to job becomes easier and storage no problem. Priced at little more than a dollar a pound, makes this versatile giant attractive to cost-conscious military installations. May we forward you further information, specification and prices without obligation?

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DECIMAL ELECTRONIC DIGITAL COMPUTER

Another New Readix Computer, manufactured by J. B. Rea Company was delivered to the Air Force Armament Center of the Air Research and Development Command. The installation was made at the Data Reduction and Research Branch of the Ballistic Test Facility in Pasadena, California. The Readix Computer will serve as the nucleus of the data reduction and research program. The paper tape on which the film measurements are punched, will be fed into the computer. The Readix will then automatically compute time—position—velocity—acceleration data, which will accurately describe the performance the unit being tested. Whereas by hand computing, it formerly took as much as a week to reduce a round of data, the advance design of the Readix will accomplish all the requisite computations in approximately one hour. The J. B. Rea company will be glad to survey your installation needs at installation level.

For more facts request No. 14 on reply card

ALUMINUM TRIPOD EASELS

New lightweight, sturdy aluminum easel designed to hold changeable message poster frames or charts is now available for immediate shipment from the Arlington Aluminum Company. Arlington Tripod Easels are of polished aluminum tubing, ¾″ in diameter by .049″ wall. Studs are located in two positions for either horizontal or vertical display frames. Weighing 4½ pounds, the 68″ easel has polished aluminum caps concealing the tube ends. Low in price, this easy-portable frame can assist in selling or displaying your program. Descriptive information is available without obligation.

For more facts request No. 15 on reply card

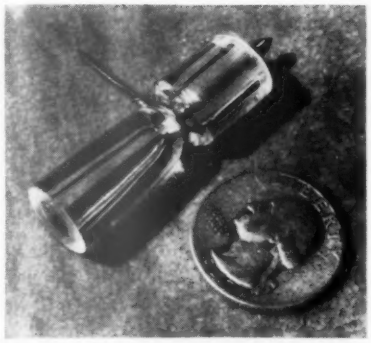
CONSTRUCTION-MATERIALS CATALOG

Presstite-Keystone Engineering Products Company. A colorful 28-page catalog dealing with the Presstite-Keystone line of construction materials for highways, airfields, streets and sewers has just been released by this manufacturer. Convenient references and illustrated descriptions with a handy marginal tab-index, permits ready reference of any required information. Complete with chemical and physical characteristics, data on how the product is packaged, or the specifications the product has been designed to meet, make the new catalog valuable to public works, base and post engineer personnel and operating departments. Forwarded without cost upon your inquiry.

For more facts request No. 16 on reply card

NEW "IONOVAC" TO REPLACE LOUDSPEAKER DIAPHRAGM

Dukane Corporation. A revolutionary device which is being hailed by engineers as the first practical use of ionized air to replace diaphragms in loudspeakers is now in production by this firm. Its applications as a generator of ultra-sonic waves for wide use in industrial and research work are of



great importance. Heart of the new invention is a small open-ended quartz cell (see cut), the size of a peanut. Within the cell, air molecules are bombarded with a high frequency, high voltage current literally batting millions of electrons out of their atomic orbits, ionizing the air.

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COMMON STOCK INVESTMENT

Hamilton Management Corp. Through Hamilton Funds, Inc., a managed common stock investment fund, this firm offers lump sum or monthly investment plans to fit any budget. Interested persons can inquire without obligation. Firm recently declared another quarterly dividend.

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VISUAL CONTROL BOARD

Wassell Organization, Inc. Produc-trol not only schedules but automatically checks with time, line, and color control, has low original and upkeep cost.

For more facts request No. 19 on reply card

VISUAL MANAGEMENT CONTROL

Graphic Systems. This New York firm invites men interested in efficient management to get things done with Boardmaster Visual control which gives a graphic picture of operations, spotlighted in color, saves time, money, and stops errors.

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BELCO REPLACEMENT FAUCET STEMS

Miller Manufacturing Company. Leaking compression type faucets, lost water and excessive maintenance costs are gone forever with the installation of Belco ball bearing replacement stems, complete with bibb washers. The bibb washer is only under compression and is not subject to cutting or grinding action.

For more facts request No. 21 on reply card

MUTUAL INVESTMENT FUND FACTS

Brown, Madeira, and Company. This company, specializing in mutual investment funds, will send, without obligation, facts about conservative, middle-of-the-road, and aggressive types of investments and mutual funds.

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FILING CABINETS

Wassell Organizations, Inc. Cut your office force filing time in half, save up to 40% in space with Corres-File. Revolutionary filing equipment takes your file clerk out of the laboring class and saves you 50 cents of every dollar you now spend.

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Vogel-Peterson Company. Hold more wraps in less space. Write for Bulletin CK455.

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The Keystone Company. This leading eastern investment firm offers Series K-1, a diversified investment in securities selected for current income.

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MUTUAL FUND REPRESENTATIVES

Boruski. This leading New York firm wants mutual fund representatives on spare time basis, either active or retired persons. Top commission offered. Details Free.

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FREE FIR PLYWOOD PURCHASING GUIDE

Douglas Fir Plywood Assoc. A handsome wall hanger containing handy fir plywood grade-use-specification guide is free to anyone in your firm who specifies fir plywood. Also available is a specification portfolio giving detailed plywood descriptions, etc. Offer good in USA only.

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Mutual Fund Representatives

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Active — Retired

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not only schedules,
But **automatically checks with TIME, LINE and COLOR control**

- Original cost and upkeep low.
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- Historical record to back it up.
- Bad situations show automatically.
- Its simplicity has put it into world-wide use.
- Analyze 100 items in 10 seconds.

Effective Tools for Effective Management

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Westport, Conn.

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G. Do you have organizing ability?
H. Are you able to concentrate on a problem to the exclusion of all else?
I. Do you have a constructive imagination that is constantly seeking and finding new and better ways of doing the job?"

A good speaker then is a well qualified man, with something to say and who knows how to say it.

On the use of words, use words that are clear, appropriate, direct, vivid and expressive. On delivery, be direct, animated, use variety in pitch, rate, and volume.

The seven rules for successful conversation techniques are:

"1. Ask questions.
2. Use common ground.
3. Observe the one-minute rule.
4. Be a good listener.
5. Be complimentary.
6. Don't argue.
7. Don't hit below the belt."

Business conversations or conference speaking utilize all the elements of conversation speaking plus new techniques:

"1. the please-thank-you-smile.
2. common ground.
3. your attitude.
4. the yes response.
5. the trial close."

Use examples, illustrations, visual aids whenever possible.

Sales, job interviews, oral reports, training sessions, policy determining meetings as well as all other types of communication in business will be more effective if the speaker is aware of the following basic motives that determine our actions and make up the pattern of life:

"1. Self-preservation.
2. Self-esteem.
3. Acquisition of property.
4. Constructiveness.
5. Safetey.
6. Pugnacity
7. Curiosity.
8. Attractiveness.
9. Imitation.
10. Love of family."

Seven rules to be followed for public speaking are:

"1. Study your prospective audience.
2. Select a topic.
3. Formulate a specific purpose.
4. Collect material and information for the speech.
5. Analyze the material and eliminate all that is irrelevant to your specific purpose.
6. Organize material by rough outline.
7. Prepare a speaking outline."

Overcome stage fright by relaxation, experience, correct attitude, good preparation and thorough planning. Consider movement, posture, gestures.

The authors explain, give examples, and illustrate in detail the above material. Only a brief summary has been attempted here, but to make use of the rules mentioned it is necessary to read the explanations in order to have the background needed to increase speaking skills.

Actual speeches are given to serve as models, and the authors conclude with an explanation of Parliamentary Procedure.

Wanted

"EFFECTIVE SUPERVISION," by Milton Brown (Macmillan, 259 pages, $4.50).

Needed: By organizations everywhere.

Apply: Industry, Business, Government.

Title: Supervisor—one who will be responsible for the work of others.

Duties: Job planning.
To do some of the work yourself.
Passing on information.
To get results.
Distribute work load evenly.
Seeing that tools and materials are on hand.
To inform workers of objectives.
Train employees.
Interview prospective employees.
Keep waste down and productivity up.
Eliminate hazards and reduce accidents.
Enforce regulations.
Establish sound employee relations.

Traits: Receptive to suggestions.
Able to give recognition to others.
A positive thinker.
Open minded.
Cooperative.
Fair.
Observant.
Natural and friendly.
Can listen attentively.
Not liable to lose his temper.

Qualifications:
Must get along with others.
Able to work as a team member.
Understand administrative organization.
Must be able to lead, not drive people.
Capable of keeping a cool head in emergencies.
Businesslike but approachable.
Impartial and impersonal.
Willing to take directions as well as give directions.
Able to use authority properly.

Opportunities: Unlimited.

Above all applicant must be able to fulfill the responsibilities of a supervisor by finding out what is to be accomplished by his department, how the work can best be done, planning each work assignment carefully, and seeing that the work is done by a specified time.

Further information read "Effective Supervision," by Milon Brown. He has all the answers.

THE GOLDEN AGE

"DICTIONARY OF RUSSIAN LITERATURE," by William E. Harkins (Philosophical Library, 439 pages, $10.00).

Here is a book for the scholar, the historian, the person who is interested in literature. Russian literature is closely interwoven with history as the Russian novel related events of the moment and told of important problems. Severe censorship has always existed in Russia, forcing the people to express themselves through the form of the novel. There were no scientific or theological journals, there were no debating societies or clubs for discussion—only fiction that was not really fiction. That is the reason Russian literature is often difficult to read and hard to understand. The necessary background material is of utmost importance to the reader.

Between the pages of this comprehensive volume is given a multitude of facts on the complete field of Russian literature. Many short articles on historical subjects are valuable for their background information. Hundreds of essays on individual writers cover all Russian writers of any significance. Literary periods, schools, termi-

* * *

● Honest John and Corporal are the only field artillery missiles currently in the hands of U.S. Army troops both in the United States and overseas. Both missiles can deliver either nuclear or high explosive munitions. Both can be transported by air.

nology, philosophers have not been forgotten.

While this book is mainly a reference book, the accounts of the historical development and the longer articles on outstanding writers are so skillfully narrated, it is possible to read much of the material presented with pleasure and enjoyment.

The Golden Age of Literature in Russia created some of the most important classics of all times. Any list of the best classics always includes many books produced during this period. For better understanding of Dostoyevski, Tolstoy, Turgenev, and many others, this source book will be of great help.

RECOMMENDED BOOKS:

"MANUFACTURING METHODS AND PROCESSES," by Arthur C. Ansley (Chilton, 561 pages).

For executives, purchasing agents, engineers, production men, a complete and over-all picture of manufacturing trends, A one volume summary of production that points up and relates the technical, design, and manufacturing problems, their applications, technics, and economics. A guide for better understanding and broader perspective.

"OPERATIONS RESEARCH FOR MANAGEMENT," Volume II Ed. by Joseph F. McCloskey and John M. Coppinger (The John Hopkins Press, 563 pages, $8.00).

Case histories of the application of operations research methods. A thorough explanation is given on why operations research is becoming so important to the Armed Forces.

"T.N.T.—THE POWER WITHIN YOU," by Claude Bristol (Prentice-Hall, $3.95).

How to "release the forces inside you and get what you want." A powerful book designed to make the reader think for himself and accomplish whatever he sets his mind to do.

"THE ART OF SUCCESS," by the Editors of Fortune (Lippincott, 302 pages, $5.00).

Profiles are given of 21 individuals who are well known on the American business scene. These biographies are interesting to read and go deeply into the background of each subject.

"INVESTOR'S ROAD MAP," by Alice B. Morgan (Simon and Schuster, 145 pages, $1.50).

Television viewers will remember Mrs. Morgan as the lady on the $64,000 Program." She explains clearly her ideas and gives sound advice on an investment program.

"PATTERN OF MANAGEMENT," by Lyndall F. Urwick (University of Minnesota Press, 100 pages, $2.50).

This English author is known for his penetrating analysis of scientific management. His thoughts in his book are taken from a series of lectures he gave at the University of Minnesota.

"THE LAST PARALLEL," by Martin Russ (Rinehart, 333 pages, $3.95).

This is the journal of a Marine corporal in combat in Korea. An honest picture, well told, with many sidelights on technical matters.

"THE WORLD OF MATHEMATICS," Ed. by James R. Newman (Simon & Schuster, 4 volumes, $20.00).

These four volumes are a unique anthology of all aspects of mathematics from the writings of Archimedes, Carroll, and Bertrand Russell, and many, many others.

Management Briefs

(*Continued from page* 42)

NINTH Naval District and Supervisor of Shipbuilding, USN, and Naval Inspector of Ordnance, Chicago, Illinois, participation in the Beneficial Suggestion Program has increased tremendously. Fiscal year 1952 disclosed barely 2% participation with only 1% recommendation for awards. Each year since, participation and adoption figures have doubled and tripled. In 1956, participation rose to 31%, and 13% of the ideas submitted were recommended for adoption and awards. Additional promotional ideas are being explored to increase individual and team enthusiasm of this "think" side of the awards program. The "do" side of the 1956 ledger contained 5 Superior Achievement Awards and 10 Sustained Superior Performance Awards. When these statistics apply to a service rather than manufacturing type of organization, and the total employment level is under 300, the achievements described become impressive indeed.

Management Program for French Personnel. A far reaching new program to increase the participation of French personnel in supervisory and management positions at United States Army installations has been adopted by the Communications Zone in France. The program called the "Nancy Staffing Plan," actually began more than a year ago at the Nancy Ordnance Depot, where results were so satisfactory that COM Z Headquarters decided to implement the program at other selected installations. The ultimate objective of the plan is to give French personnel more supervisory responsibility. The goal of the program is to increase career opportunities and thereby attract and retain qualified French personnel relieving military personnel for essential military assignments. More details on the plan are available by writing HEADQUARTERS USAREUR COMMUNICATIONS ZONE, APO 58, New York.

Ideas Net Airmen $60 at Fairchild AFB, Washington. The base recently awarded four airmen a combined total of $60 for ideas submitted in the management improvement program. S/Sgt. John D. Clevenger and S/Sgt. Donald J. Donner from the 92d Transportation Squadron and T/Sgt. Walter R. Jones and A/1C Gerald D. Smith, Jr., both of the 92d Field Maintenance Squadron were the recipients. Ideas ranging from changes in motor vehicle utilization forms to modification to aircraft components all build toward the goal of "More Defense Per Dollar."

Commendation for Edward H. Neese, OQMG. Edward H. Neese, Assistant Chief, General Supplies and Equipment Division, Office of

the Quartermaster General, Washington, D. C., was presented last month with a Special Letter of Commendation from Major General K. L. Hastings, the Quartermaster General. The Commendation made reference to the superior accomplishments of Mr. Neese in assisting the progress in the Department of Defense Interservice Supply Support Program.

Change in Command USS Piper. Lt. Cmdr. C. S. Bowcock, Jr., USN, relieved Cmdr. Joseph W. Beadles, Jr., USN, as commander of the Submarine PIPER in unusual ceremonies recently at the Electric Boat Company (General Dynamics Corporation), in Groton, Connecticut. Sub-zero temperatures and biting winds on the Thames River convinced all that the fantail of the PIPER was no place for a change of command ceremony. Having just docked for voyage repairs, the Submarine Library of Electric Boat was made available, and crewmen stood in formation as the ceremony took place.

Guided Missile Supply Conference. About 40 representatives from Air Materiel installations in the United States attended last month a two-day Guided Missile Supply Conference at Headquarters, Air Materiel Command. Major General Frederick J. Dau, USAF, AMC's Director of Supply, welcomed the conferees on arrival and introduced all to Colonel James J. McCormick, Chief of Aircraft Branch and host to the meetings. The objective of the conference was to promote ideas for continuing improvement of supply support for guided missiles.

Reduced Time on Supply Requisitioning. A new device called a transceiver is saving time, money and manpower in handling supply requisitions between Armed Forces Far East, and the Overseas Supply Agency at Fort Mason, California. The new punched card system is expected to reach additional continental points within the next year. "The supply requisitioning pipeline has been reduced by 20 to 30 days," said Russ R. Lloyd, Chief of Management at Overseas Supply Agency.

New Skipper for Navy ESO, Great Lakes. Captain Hershel J. Goldberg, USN, is the new commanding officer of the Electronics Supply Office, Great Lakes, Illinois —the Navy's supply demand control point for electronic material. Captain Goldberg took over from Captain Leland P. Kimball, Jr., who has reported to Washington as Assistant Chief, BuSandA for Supply Management. A 1935 graduate of the U. S. Naval Academy, Captain Goldberg brings to the unit a wealth of experience in the field.

USAF Award to Hamilton Supervisor. Mr. Melvin L. Dunn, supervisory armament advisor for Headquarters Western Air Defense Force at Hamilton AFB, California recently received the Department of the Air Force decoration for Exceptional Civilian Service. Dunn who is a commercial pilot and active in the Base Aero Club, has been a civil service employee since 1942. The award was presented by Brigadier General Monro MacCloskey, Commander, Western Air Defense Force.

New Hot Rod

This jet car was developed by All American Engineering Company of Wilmington, Del. for the U.S. Navy Bureau of Aeronautics to test aircraft arresting gear. The bright red hot rod, powered by four jet engines, roars down a test track at 200 miles per hour or more pushing in front of it dead loads which are slammed into arresting gear testing the strength of the gear and its capability to absorb the energy of a landing jet fighter or bomber.

What Management Means

(*Continued from page* 39)

called "The Army Command Management System."

For simplicity, let us consider these parts separately.

Programming. I am sure that my definition of this term fits all three services. To me, programming is a system of identifying the logical division of a mission into objectives that can be scheduled for achievement in a given fiscal year. This is a system of advising widely dispersed commanders what to do and when to do it. In addition, it provides guidance on the resources needed to accomplish the mission.

There are three phases to this. Development, execution, and review and analysis. The accomplishment of all three is a responsibility of *management* at all levels of command.

The development phase could be compared to a blue-print with specifications and timing added. In the Army system we have three controlling programs. These cover five years of operation. They are:

Troop Program—The organization and deployment of the Armed Forces.

Material Program—The objectives to be achieved in the procurement, distribution, storage and maintenance of supplies and equipment.

Installations Program—The guidance for acquiring, constructing and maintaining the Army's physical plant.

This gives you an idea of the development phase. Of course, this phase starts with joint plans for the mid-range planning period and ends up with the post Commander developing programs and schedules for his operation in the forthcoming fiscal year. You will note that I have used the term "management" to mean the Commander and his staff at each level of command. For example, G-1 is the program director for the Troop Program and G-4 is the program director for the installations program.

The execution phase of programming is the action phase. This phase takes place throughout all levels of command, but most of the actual operations are done at post level. Examples are the training of our General Reserve Units, organization and training of new units, support of Reserve Component summer training, operation of our school and training center systems and logistics support for the whole. It is a big "management" job to supervise this phase of programming.

The Review and Analysis phase is the supervision of Program Execution. Only by this phase can the Chief of Staff or any of his program directors determine the status of their program progress. In so doing, for example, I can revise priorities, select areas to be emphasized, and arrive at a decision on shifting resources to meet requirements. This brings up budgeting as one of our means of establishing resource requirements.

Budgeting.—As we program our mission, we must prepare a budget to represent the dollars it takes to pay for the labor, equipment, supplies, and services that will be required. Without this element of management, we would not be able to obtain the required resources. The Comptroller is my financial management *advisor.* However, he could not accomplish this without getting the facts from other staff sections and from the installations and activities in the Army area. It takes skill to arrive at a good budget estimate and to supervise the execution of the funding program. This is a part of the next definition of management.

"*Management*" dictionary definition. "Skillful treatment." We think of this as "methods." Under either term it involves *PEOPLE.* Here is where work management and personnel management are combined.

One method in management or as management is the establishment of priorities. With the multitude of problems arising daily in the operation of an Army Headquarters, decision on the first order of business is a major question that must be answered by each person in a management position.

Priorities are often established by higher authority. This causes each level of management to decide on the method that will be used to meet close deadlines and still accomplish the day-to-day workload. The Chief of Staff in an Army headquarters must rely on his staff for the majority of answers to such questions.

Another method within management is the selection of a staff. As in all services, a Chief of Staff or Commander is often placed in the position of being given an assignment with a staff already on the job. The method he uses in managing his staff has a lot to do with how successful he is. You might say in this case that he has inherited a staff and that the staff will continue to operate by the methods they have learned through experience. A good manager will depend on his staff under these conditions until he finds where their methods can be improved.

Thinking a moment of improved methods or management improvement, I would like to point out again the difference in management and comptrollership. In the Air Force and in the Army the focal point for management improvement is the Comptroller. However, this is due to his position as management engineer. His staff of technicians in management engineering study the methods of our operations and recommend ways by which we can improve them. The Comptroller does not tell you *what you must do.* He only *recommends how* you can improve. His staff goes even further to prove this point. They do this by utilizing, as a part of their team, a member of the management or technical staff of the organization being surveyed. In this way, the know-how of a technical or highly specialized operation is used in arriving at a *practical* improvement.

The fact that management improvement reports are routed to the Comptroller may cause some to think of the Comptroller as synonymous with the term "management." Such is not the case. When your management improvement reports are received by the Comptroller, they are immediately forwarded to the appropriate staff office for review. Any action taken as a result is taken by the staff responsible for the area or work in which the improvement was made.

This leads into our final dictionary term for management. "Executive ability or skill." This term we do use in the Army. However, we might add "controls" as a part of this definition. I think of controls as a means of applying some of our executive ability or skill.

I also think that a good manager utilizes as few controls as possible.

We have many control measures in use by Army Executives. The key controls in use in managing the Army Executives. The key controls in use in managing the Army are those that control our missions, programs, organization, and resources. Each of these in itself is a control on our management. I use the word "resources" to cover manpower, money, materiel and methods.

I can pretty well summarize what management means to me by saying: When you use executive ability or skill (controls), skillful treatment (methods), judicious use of means to accomplish an end (programming and budgeting), as the collective body of those who direct an enterprise (organization), you are *management.*

I note that the name of this association is "Armed Forces Management Association," and its purpose is the dissemination of new ideas, and the sharing in and contributing to the development of new techniques and methods for the management of our national military resources. Your invitation states that management in our Armed Forces is *one of the most vital* matters facing our commanders today.

Now if you will permit me, I want to quarrel a bit with that last statement for the purpose of emphasis on my point.

Management in the Armed Services is not new. Some people may have just discovered it, but I assure you—Friends—that we have been using management since the days of our grandfathers and before.

What is new is the application of techniques and methods of management in business and industry, to the management of the Armed Services. And I note that these techniques and methods are somewhat new to business and industry, relatively speaking.

Mr. John Fox, President of Minute Maid Corporation, in a speech to the Command Management School, notes that "as the war ended our managements awoke to the great need and the great lack of qualified top management. Executive development plans became a fad—nearly every major company had one."

In an address at the Army Command Management School, the Honorable W. J. McNeil, Assistant Secretary of Defense, is quoted as saying:

"There is, however, one fundamental difference between management in government and management in private industry. The acid test of management's worth in private industry is its ability to produce a margin of income over outgo—that is, to manage to make a profit. This is not the task of management in government. Our task is to develop sound policies and programs and, after approval—to carry them out in the most efficient and economical manner possible."

Now, Mr. McNeil's statement applies to the task of government, but I think we should clarify its application to the task of the military services. The fundamental task of the Armed Services is to be ready to fight and when called on to do so, to fight successfully in the defense of the country. If sound policies and programs carried out in the most efficient and economical manner give them this capability, we are in agreement.

However, we must not forget that the primary purpose of the military services is to impose by force the will of the United States on our enemies in defense of our nation, and whatever supporting systems are devised must be consistent with this purpose. The combat arms must give direction and meaning to the services, not vice versa.

It is frequently pointed out that the military services are big business. We spend close to 60% of the Federal budget, we control some twenty billion dollars worth of real property, our assets run in the neighborhood of $150 billion or 25% greater than the combined assets of the 500 largest industrial corporations in the country, and so forth.

Looked at from this standpoint, the military forces are big business. But let us not forget that there is a fundamental difference between armed services and big business. We show no profit on our balance sheets, declare no dividends and have no cost versus earning power analyses.

We are in a sense an extravagance during peacetimes but at the same time the sole salvation of our country in time of war or national emergency. We are the life insurance policy, the fire department, the police force protecting our homes and way of life.

Therefore, we must be ever alert to insure that our management systems produce a sound, efficient, reliable military force *whatever* the level of resources available for the task.

The Wall Street Journal, in discussing the over-control of currency by Great Britain and her resultant inability to support herself without help, even in peacetime, makes the following observation: "They have too many currency experts—*and highly expert they are*—whose whole lives have become wrapped up in their conviction to the point where the control apparatus has acquired a life of its own."

I might paraphrase this statement to make my point. Let us not have too many highly expert management experts whose convictions reach the point where their control apparatus acquires a life of its own and we are beset with management for management's sake. And, friends, that is a very real, a very live danger.

In our enthusiasm for improvement of our management processes, let us never forget that our objective is to raise and maintain armed forces capable of defending this country in time of war.

Today the demands of management for personnel and the stringent limitations on personnel at the post and base level are causing a flight of personnel from their primary jobs in operations and logistics to management. Local demands for personnel spaces for management have been filled by cutting space allocations to logistics operations.

Management means the application of sound judgment to the utilization of available resources to accomplish assigned objectives.

And to the military man that objective is not a financial inventory, a stock fund, or command management analysis. Those are merely his tools. Let us be ever alert to insure that management remains a commanders tool, that no report, no statistic, no analysis be permitted that does not definitely contribute to the ability of the commander to achieve his objective.

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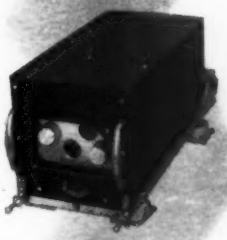

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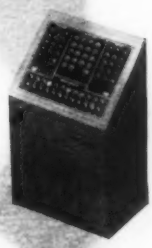

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